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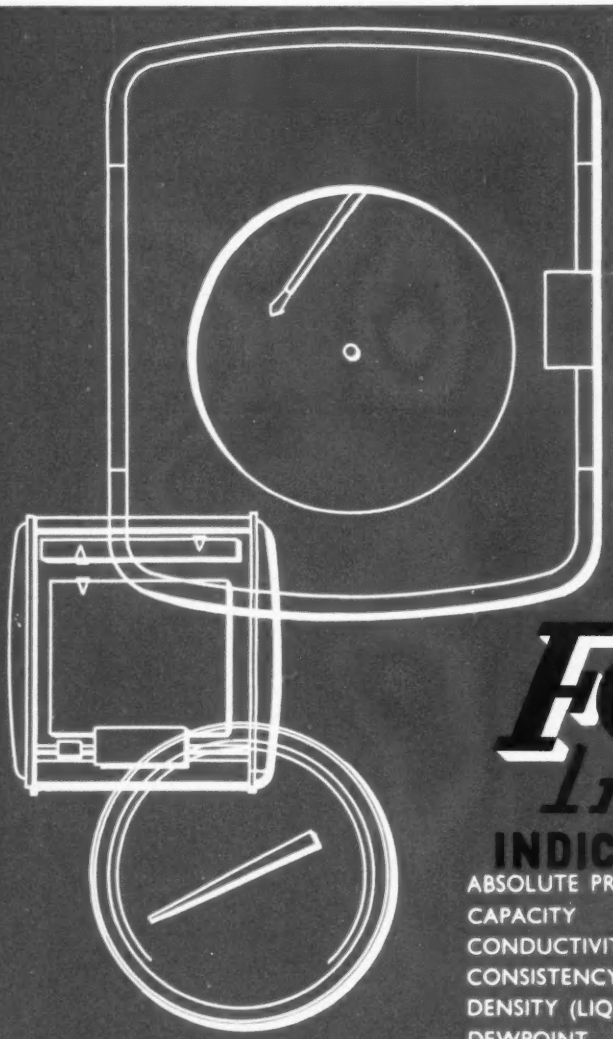

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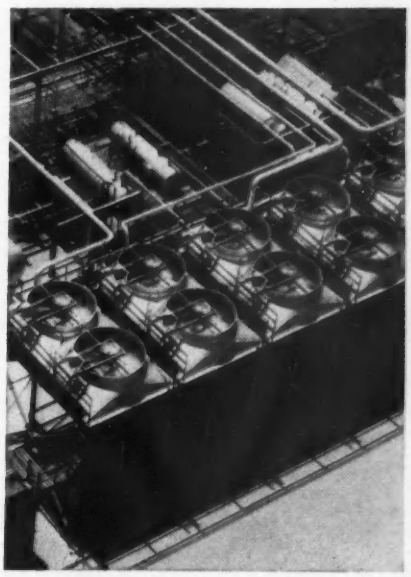

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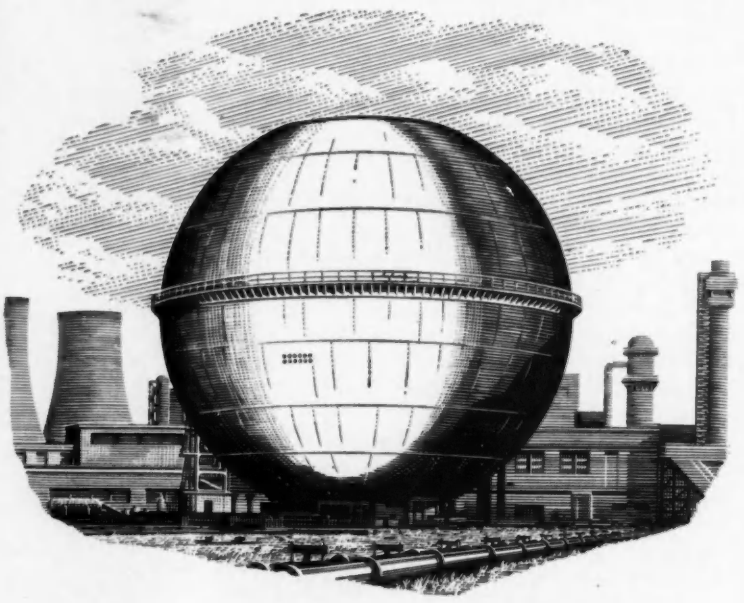

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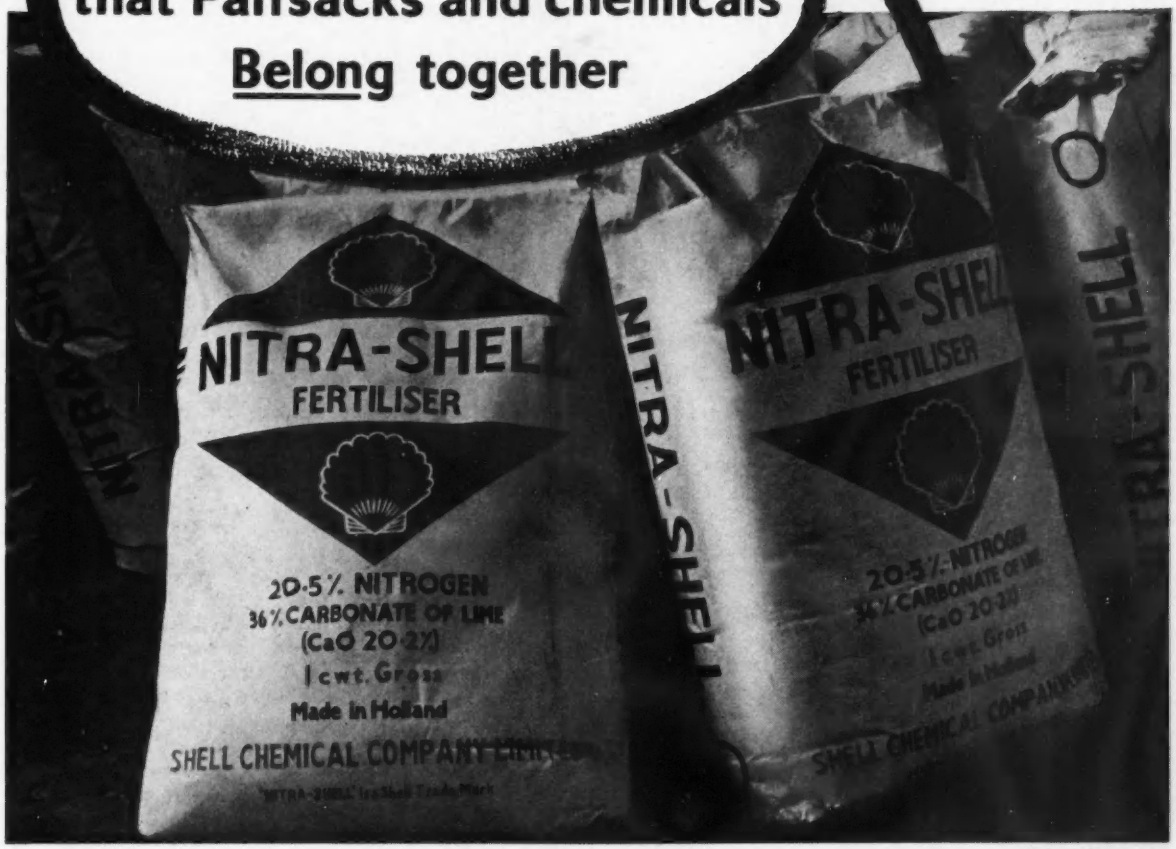

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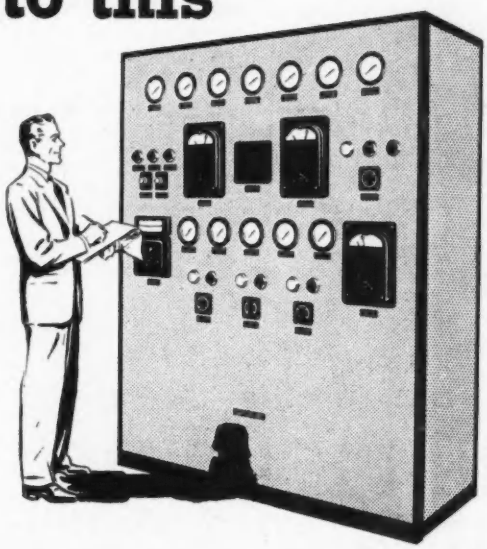

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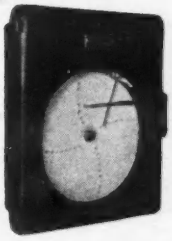

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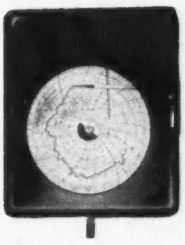

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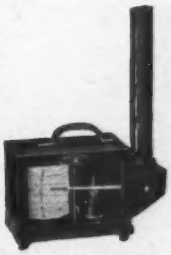

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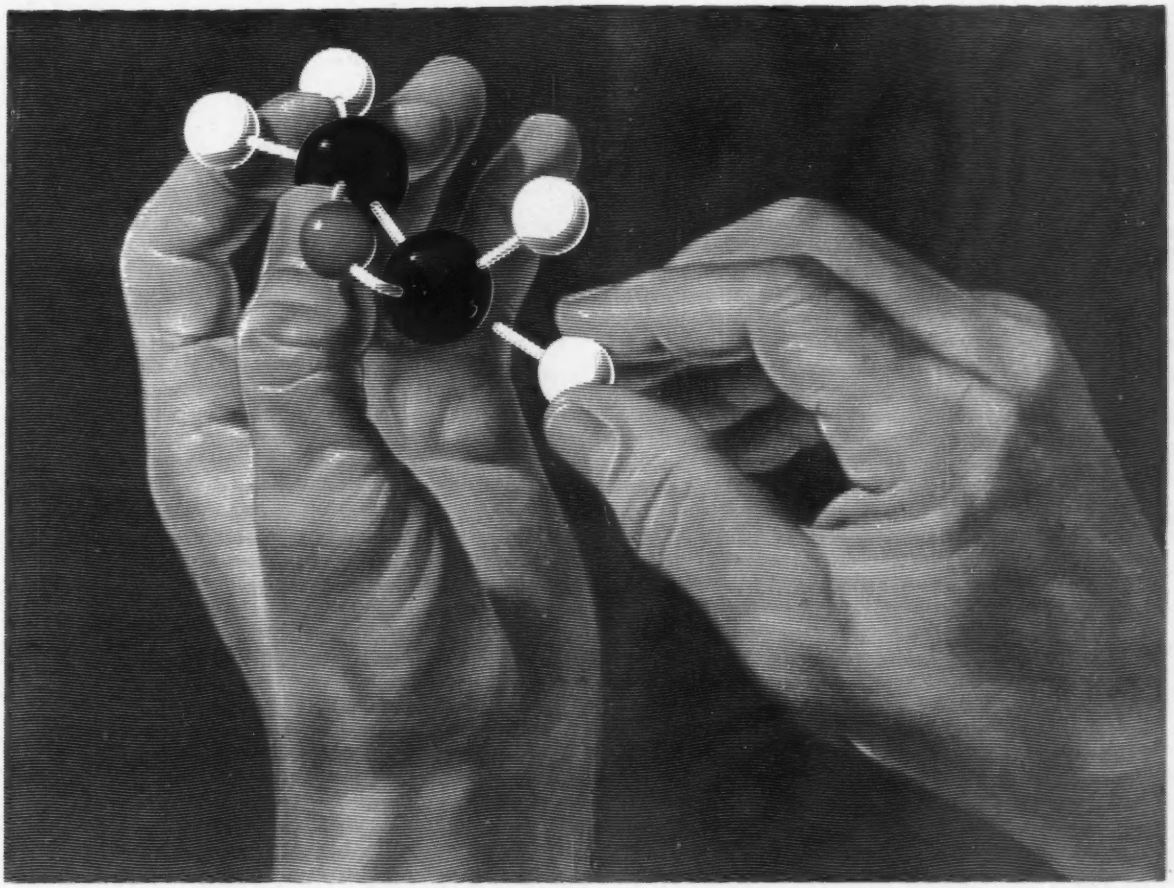

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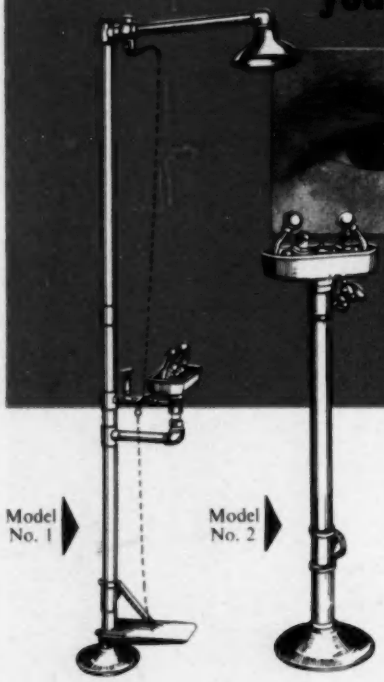
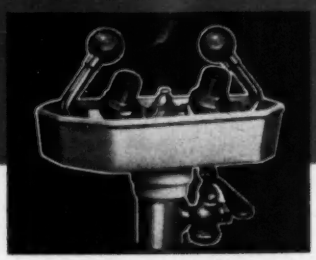


Model No. 1

Model No. 2



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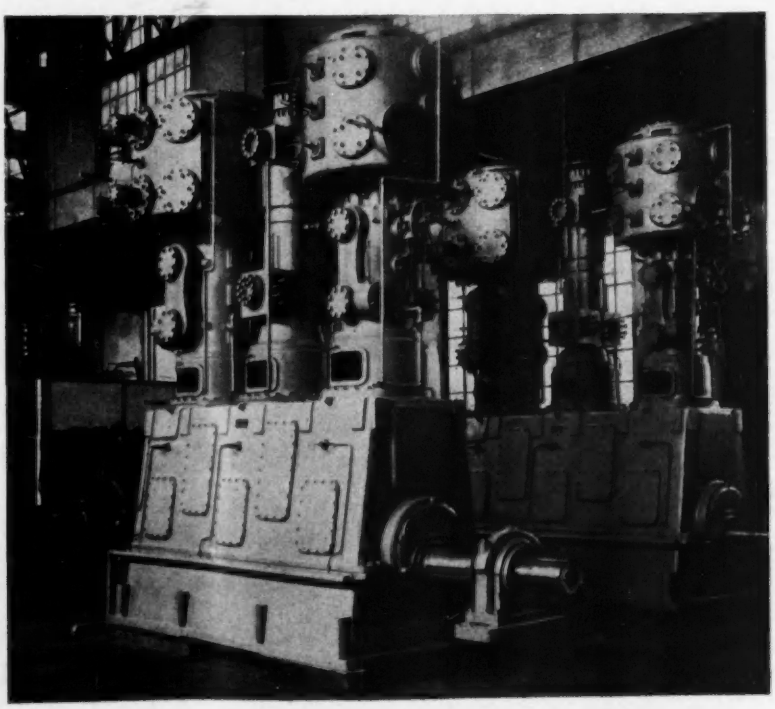

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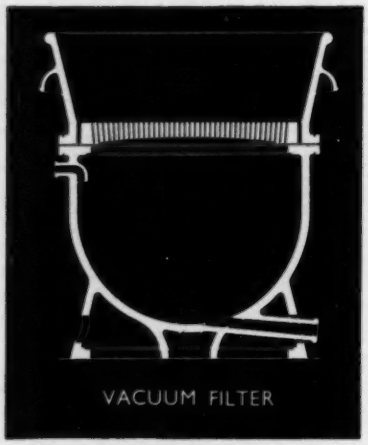

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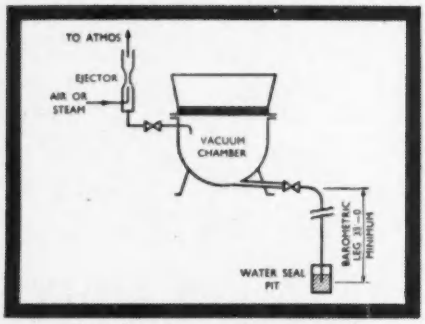
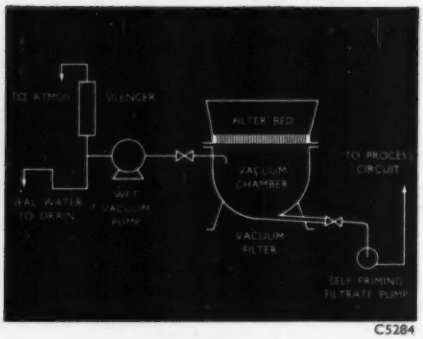


Typical arrangement of accessories when using Wet Vacuum Pump and Filtrate Pump.



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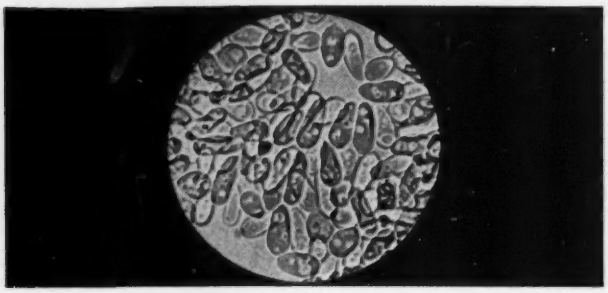

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CHEMICAL AGE

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BRITAIN'S GAS INDUSTRY

TEN years ago, on 1 May 1949, the gas industry in Great Britain passed into public ownership. This changed the organisation and gave the industry the opportunity of improving the overall economics of its operations by concentrating gas manufacture into larger units and of maintaining and improving its flexibility by developing the use of gas from a variety of sources, while still providing the community with an efficient and economical service. To represent the gas industry as a whole and to be responsible for matters which called for action on a national basis the Gas Council was established.

The new structure was, of course, largely an experiment, but it has proved a successful one. While promoting and assisting in efficiency with regard to the Area Boards, specific duties have been mainly related to finance, labour relations and research. Before vesting date, research in the gas industry was conducted by some of the larger gas undertakings, by the Gas Research Board and the University of Leeds. A committee appointed by the Gas Council advised at an early date the establishment of two research stations, one in London and the other in the Midlands. There is now, therefore, the London Research Station embracing the research laboratories of the North Thames Gas Board and the Midlands Research Station which is at Solihull and administered by the West Midlands Gas Board. The latter is entirely new and was set up by the Council to conduct research on complete gasification processes. The work of the Gas Research Board was taken over and transferred to the Midlands Research Station, after which the board was wound up. Research at the University of Leeds has been continued and expanded.

The council's research programme lays down five main objectives: improvement of existing processes for gas and coke manufacture and recovery of by-products; development of new processes for the manufacture of gas from coal and oil, particularly at high pressure; development of more efficient methods of purifying gas and recovering by-products; improving existing appliances and developing new appliances for industrial and domestic consumers; and obtaining fundamental knowledge of the properties of gases and the mechanism of combustion and flame propagation. Research on all the objectives is now well under way.

In connection with the gas industry much has been said about coal recently. Sir Harold Smith, chairman of the Gas Council, recently spoke on the subject of fuels for the gas industry. The price of high quality carbonisation coals since nationalisation has risen so that the gas industry had has a very hard struggle (CHEMICAL AGE, 3 October, p. 447). The Council has therefore investigated other ways of making gas which do not require coal. Nevertheless as the Council states in its 10th Report (see p. 531), it is convinced that home-produced coal should continue as an important raw material for gas manufacture in this country. The loss of part of the market for coke, however, due to competition from oil has made the carbonisation process uneconomic. Realising this, the Council has laid down a research programme aimed at development of a satisfactory process of complete gasification of coal.

The Lurgi process, it has been proved, can work satisfactorily with British coals. The investigations have also indicated the advantages of developing fixed bed gasifiers. At the same time studies have been made of the hydrogenation reaction in fluidised beds. The advantages associated with this reaction are several. Unlike the fixed bed gasifier, small coal can be gasified and the gas produced does not require enrichment. It also offers the possibility of reforming part of the rich gas obtained, in order to provide the hydrogen required and so avoid the necessity of an oxygen supply. But it has been found that oil can be gasified by hydrogenation more easily than coal and that many of the chemical and mechanical engineering problems associated with a coal gasification process apply equally to oil. Hence the logical hydrogenation of oil during large-scale pilot plant investigations.

Use of oil during large-scale pilot plant investigations and trial imports of liquid methane have caused serious misgivings in the National Coal Board and mining areas. The Council, however, have to run their industry as economically as any other industry serving the public. Obviously if new types of coal or poorer coals than those previously employed can be used satisfactorily in gas production, then that is all to the good. If, as it appears, it is easier to iron out chemical and plant problems using oil or liquid gas, then the time taken in developing a suitable industrial process will be shortened to the benefit of all. And the Council must be congratulated on seeing the value of granting to six contractors licences under patents in respect of the high pressure gasification processes which are being investigated by the Council. Such arrangements should speed up commercial development of the processes.

As a chemical producer the gas industry has not done very well during the last year. At home the market has not been strong and the trend in export business has been one of falling demand due mainly to increased competition and the U.S. recession. Again petroleum fuel oils are noted as clouding the picture for coal tar fuels. Demand for pure benzene is strong but to increase production requires specialised techniques not available to the industry generally. Ammoniacal gas liquor still presents a disposal problem and although there is an outlet as a fertiliser, transport difficulties are a limiting factor. The industry's spent oxide market has also seriously deteriorated due to the increasing supplies of sulphur. The Council's objectives, however, include improvement and more efficient by-product recovery which should help this aspect of their industry.

NOVEL GEL FILTRATION

FOR difficult separation of substances of varying molecular size some Swedish chemists have evolved a novel gel filtration method which makes possible size-range separation of molecules. Dr. Per Flodin, research chemist at the Swedish pharmaceutical concern, Pharmacia Upsala, and Dr. Jerker Porath of the Institute of Biochemistry of Upsala University, under the leadership of Professor Arne Tiselius, reported to the 10th meeting of Scandinavian chemists on their work in this field.

Some 10 years ago Pharmacia developed a solution of the polysaccharide, dextran, which has been used as blood plasma substitute all over the world. The company has continued its research on dextran and the introduction of gel filtration with Sephadex, in which dextran molecules are arranged to form a three-dimensional network, is a result of investigations into macromolecules.

The polymerisation product of dextran, Sephadex exhibits properties such that substances of varying molecular size dissolved in water can quite easily be separated from each other. It is manufactured in the form of small grains, and consists of dextran molecules arranged in a network. Depending on the size of the mesh in the network, it is possible, Flodin and Porath say, for substances dissolved in water and having small molecular dimensions to penetrate the network, leaving the larger molecules outside—a separation which has previously presented considerable difficulties.

In practice gel filtration is carried out by stirring the polymerised dextran, which is insoluble, into water where it swells to several times its original volume. The swollen grains are poured into a vertical tube where they form, on settling, a suitable filtration bed. When a mixture of substances having different molecular dimensions is passed through the bed, the large molecules, which are unable to penetrate the grains, will leave the bed. The smaller molecules, being able to penetrate the grains, leave the bed much later. By collecting the filtrate in portions, separation of the large from the small molecules is possible. The bed returns to its original state after use and so can be used again with further preparation.

This new separation technique has been studied at both Pharmacia and the Institute of Biochemistry for about two years. It has been found useful in many instances, including fractionation of extracts of biological material, purifications of proteins, enzymes and certain hormones. Using Sephadex these Swedish workers are at present trying to prove the existence of a hitherto unknown hormone in the pituitary, which regulates the balance of ACTH in the human body, which in turn affects the suprarenal capsules, and which could be of value in the treatment of persons suffering with balance disturbances.

Gel filtration has also proved successful in the desalting of substances of high molecular weight. This latter application implies that an additional method is now available for many instances where dialysis has previously been employed. It is reported to provide results of equal value in a considerably shorter time.

Up to now this new method of filtration has been mainly employed for laboratory purposes, but these Swedish workers report it to be well suited to industrial use. Application for patent rights has been made in many countries for the synthesis of polymerised dextran as well as for the use of this substance in gel filtrations.

A PROMISING ANTIBIOTIC

AMONG soil samples from all over the world, one from Thailand, resulted in a new antibiotic—tylosin, which is considered by Lilly Research Laboratories to have a promising future; particularly for pleuropneumonia-like organisms involved in chronic respiratory disease of poultry and other animal disease caused by spirochaetes. It also produces weight gain in pigs and poultry.

Tyosin was isolated from a new strain of *Streptomyces fradiae*, after culture on media containing glucose, soyabean meal, corn steep liquor and inorganic salts. Analysis suggest an empirical formula of $C_{45}H_{79}NO_{17}$, Dr. M. E. Haney reported at the 136th A.C.S. meeting. The antibiotic is stable for long periods at room temperature and at a pH between 4 and 9, although at below pH 4, it is converted to a new antimicrobial compound (called deomycosin) with similar activity to tylosin itself.

Against pleuropneumonia-like organisms less than 0.1 microgram of tylosin per litre, will stop growth, hence toxicity is of a low order and treatment potentially inexpensive. Lilly are continuing their testing to confirm these preliminary results before marketing tylosin commercially.

A.B.C.M. AND 'OUTER SEVEN' PROPOSALS

L to r., at the reception, Eric Stein (Distillers Co. Ltd.), Sir Roger Duncalfe, A.B.C.M. vice-president, Sir Alexander Fleck (chairman, I.C.I.), Lieut.-Col. H. F. Holme, Prime Warden, Dyers Company, J. Boulton, president, Society of Dyers and Colourists, and F. Scholefield, technical adviser, dyestuffs, Board of Trade

Scheme Has 'No Intrinsic Merits', But It May Lead to Wider Association

THE "complete failure" of the free trade area negotiations and the imminence of the final departure of the Dyestuffs Act as a prelude to an almost certain free trade area, the only advantage of which to the chemical industry was that it might serve to expedite final negotiations of the original wider concept, were referred to by Mr. Bernard Hickson in his address as chairman at the annual meeting on 7 October of the Association of British Chemical Manufacturers.

All their efforts to bring about a desirable single European trading area having failed, the logical things for A.B.C.M. to concentrate on had been steps designed towards stemming the drift of West Europe into two separate trading blocs and to enable members better to face the more difficult trading conditions arising from the European Economic Community.

The free trade area, U.K. tariff and dyestuffs committees—particularly their chairmen and sub-committees—had worked strenuously to ensure that the present negotiations in Stockholm were carried on in a way that would not prejudice the re-opening of negotiations with the Common Market countries, which, he added, "we trust may not be too long delayed".

With a view to preserving the greatest measure of West European unity, he had joined with presidents of the other eight West European chemical trade associations in forming a common centre in Zurich for the exchange of information and the arranging of meetings. The A.B.C.M. export, traffic and packaging committees, by sponsoring regional meetings, were also doing much to enable members to solve the problems connected with the marketing and transport of products inside the Common Market.

The association's annual report states that more than 95% of the chemical industry, weighted according to capital employed, saw no intrinsic merits in the scheme for an 'outer seven' area. The Government having indicated that the successful negotiation of such a free trade area was the only practical means of re-opening negotiations with the Common Market, the industry had indicated that it was prepared to acquiesce in the negotiations but would require certain sectors to be regarded as 'sensitive' if a transitional period of less than 10 years was adopted.

The industry felt that the safeguards originally requested at the time of the negotiations for a European free trade area were essential. Those applied particularly to the problem of origin of goods. The 'outer seven' association had been agreed in outline with the first tariff and quota changes on 1 July 1960. The scheme would be fully established in not more than 10 years; a shorter transitional period could be adopted if a wider European settlement was not achieved.

Following discussions between the free trade area committee and the European chemical associations, rules of origin covering inorganic and organic chemicals and dyestuffs had been broadly accepted. The consolidated criteria would form the basis of negotiations in Stockholm for the 'outer seven' scheme. The need for common anti-dumping rules, with their speedy and effective implementation by member countries in dealing with dumping from outside the area, had been stressed.

It seemed likely from negotiations between the dyestuffs committee and the Board of Trade that the present system governing imports would be replaced by a tariff, with power to issue duty free directions should an economic arrangement materialise.

Area Productivity Committees to Check Chemical Plant Deliveries

FOLLOWING discussions on the "slow and uncertain deliveries of items of chemical plant and equipment" which had been the subject of complaints, the possibility of improving delivery times through increased plant standardisation had been discussed at meetings held in Birmingham and Bristol with a view to making recommendations to the A.B.C.M./B.C.P.M.A. joint plant standardisation committee. This is stated in the A.B.C.M. annual report, published on Tuesday after a short delay owing to the printing dispute.

It was intended that further data concerning deliveries of chemical plant would be collected at staggered intervals through the area productivity committees with a view to checking whether an improvement had been made and was being maintained.

Other points discussed in the report under the heading of 'productivity' included the gradual widening of the scope of this committee's work. This had resulted in all except one of the major craft unions being represented on it; thus there now existed a platform for discussion by chemical manufacturers, employers, the J.I.C. unions and the craft unions on matters of common interest to all relating to productivity in the chemical industry.

The council had approved a proposal

Bernard Hickson, retiring A.B.C.M. chairman, centre, and Mr. George Brearley, A.B.C.M. director, receive T. W. McCullough, Chief Inspector of Factories (left); G. F. Williams (British Drug Houses), new A.B.C.M. president, with E. Le Q. Herbert (Shell Refining), president, Royal Institute of Chemistry (right)

to introduce a new booklet on careers in the chemical industry and the project was well advanced.

A review of techniques now available for improving efficiency and of the progress of productivity already achieved had been instigated. A questionnaire had been agreed for circulation to members.

The A.B.C.M. representative on the City and Guilds exploratory committee on work study courses reported that the committee's work was now complete. A syllabus had been approved for the training of work study officers of intermediate level and the first qualifying examinations in work study would take place in 1960.

Two new work study booklets now being prepared would deal with incentive schemes for process and general workers and chemical plant maintenance.

A detailed investigation was being made to determine the present position regarding the application of work study in the chemical industry.

Chemical Industry Report. Because of the delay in publishing a report based on data collected from members indicating the position at the end of 1956, published data giving a much wider survey of the U.K. chemical industry up to the end of 1958 had been collected for incorporation in a more informative document that was now nearing completion.

Public Relations. It had been decided not to undertake a public relations campaign on general topics on behalf of the industry as a whole. The cost of an adequate campaign would have been beyond the association's present resources and council thought it undesirable to appeal to members for funds to cover it. The field was already well covered by many individual members who spent large sums on publicising the industry by prestige advertising. The decision was also influenced by the heterogeneous nature of the industry.

Chemical Engineering. Arrangements were made by the chemical engineering and research and advisory service committee with five universities for work to begin on the six projects recommended by the distillation panel. Eleven firms had indicated their willingness to collaborate with Manchester College of Advanced Technology on the operation of industrial scale packed columns. A new questionnaire was designed to ascertain the needs and wishes of the chemical industry in the field of liquid/solid separation.

The possibility of setting up other specialist panels was being considered. In particular, a new questionnaire designed to assess the needs of members in the general field of gas cleaning had revealed substantial interest in the subject.

Dyestuffs Committee. The publication of methods of analysis for permitted food colours and the first British Standard for an approved food colour were awaited. Work on five further colours was proceeding.

Instrumentation. A specification for infra-red gas analysers had ensured that instruments of improved design were now available for use. The present and potential utilisation of ultra-violet techniques had been the subject of a questionnaire to members as a guide to further action.

Packaging. Enquiries were being made into the extent to which U.K. makers were being handicapped by foreign suppliers using packages which were lighter, less elaborate and therefore cheaper than those enforced for packages exported from this country. One difficulty was that shipping companies did not necessarily accept the Ministry of Transport recommendations; inability to produce a clean bill of lading at a foreign port resulted in considerable difficulties with letters of credit. This difficulty might be alleviated by an invitation made by the Ministry to the packaging committee to discuss performance tests.

Safety. Further pamphlets were being prepared by the British Chemical Industry Safety Council and one on safety in the maintenance of chemical plant was almost ready for submission to the works safety committee. The question of alternative work following injury or disease and an analysis of the pattern of accidents in the chemical industry were under consideration.

Statistics for lost-time and accidents for 1958 showed a continued slight improvement. The arrangement into 'league tables' according to the number of employees showed that the bulk of accident-free returns were from works employing less than 100; but 15% of that group returned frequency rates in excess of four, while only four works in the 500-1,000 group returned a frequency of more than three.

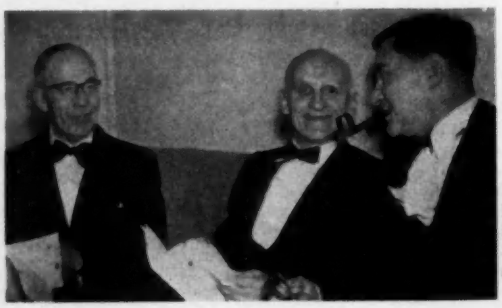
An amendment sheet setting out additional substances for which recommended labels had been drawn up and was almost ready for issue. The marketing of containers scheme might be modified to cover the use of A.B.C.M. type labels on packages smaller than 8 pint or 6 lb.

Most of the points raised by the association in connection with the Factories Acts, 1937 and 1948 had been met reasonably; in most cases the existing standard in the chemical industry was higher than the proposals.

A suggestion that the notification and clearance scheme for pesticides be extended to include veterinary prepara-

Highlights from A.B.C.M. Report

- **Area checks to see if chemical plant deliveries improve.**
- **Chemical Industry Report, 1958, nears completion.**
- **Work study in the chemical industry under investigation.**
- **More chemical engineering research projects.**
- **Support for decimal coinage, but not for weights and measures.**



L. to r.: H. V. Potter (Bakelite Ltd.), Dr. J. E. Taylor (Joseph Crosfield and Sons Ltd.) and Dr. W. G. Hiscock (Consolidated Zinc Corporation)

tions, which was not supported by the pesticide industry, was still under discussion.

Tariffs. Discussions with Customs and Excise led to the introduction of special chemical import statistics based on the new tariff format and covering compounds temporarily exempted from duty. The tariffs committee continued to study the problem of mixtures of synthetic organic chemicals, particularly in view of the new tariff.

Trade Effluents. The trade effluents committee had expressed its concern at the complacent attitude of the report on water requirements and urged the Federation of British Industries to press the Government for effective national co-ordination and expenditure to ensure adequate future supplies.

Transport. As a result of discussions with British Railways and the Ministry of Transport and Civil Aviation, much greater uniformity between labelling of dangerous goods for conveyance by rail and sea than was envisaged had been achieved. The traffic committee was in close touch with the railway modernisation scheme so far as it concerned the design of new tank-wagons and conversion of existing tank-wagons for running on fast trains.

A sub-committee had been set up to study a scheme drawn up by an A.B.C.M. member for a uniform system of marking road tankers used for conveying dangerous substances.

Exports. Some dissatisfaction was expressed by members at the terms offered to chemical exporters by the Export Credits Guarantee Department. E.C.G.D. had promised to examine, in certain cases, the possibility of effecting alterations on the lines proposed by the exports committee.

The committee has also discussed the problem of low-cost competition from Eastern countries and the Communist bloc.

Miscellaneous. The council had agreed to co-operate with the Institution of Chemical Engineers and other organisations in connection with visits by parties of Russian technologists to this country under a reciprocal scheme sponsored by the British Council, although the value of return visits was problematical.

Although an overwhelming majority of members felt that it would be an advantage to decimalise the U.K. coinage, the opinion on the decimalisation of Imperial weights and measures was much more divided. So long as more than one system remained in extensive use throughout the world, the chemical industry would continue to mark its products in whatever system of units the customer wanted.

Mr. Hickson on 'Disastrous Failure' of Earlier F.T.A. Negotiations

IN the hope that a bridge can be rebuilt between the Common Market and the 'outer seven', the Association of British Chemical Manufacturers has assured the Government of its approval to the suggestions for a Stockholm Treaty which may "mitigate the disastrous failure which occurred last December". This was stated by Mr. Bernard Hickson, retiring A.B.C.M. chairman, at the annual dinner held on 7 October. Mr. Hickson was proposing the toast of 'The guests'.

Sir Cecil Weir, chairman of the export working party set up by the Federation of British Industries early last year, replied to the toast and spoke of the need for British industry to overcome tariff barriers by setting up their own enterprises in the Common Market area.

Mr. Hickson said that the A.B.C.M. council and exports committee had given much attention to stimulating the ideas of members about expanding chemical exports. While they were proud to be the third largest exporting industry, they were not complacent about it. The changes that would occur in Europe might make the home market more competitive, but equally they could open up a wider export market in Europe to countries now closed by tariffs and quotas.

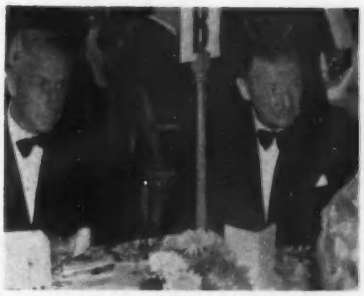
With a strong team of helpers, Mr. G. H. W. Cullinan, chairman of the A.B.C.M. exports committee, had stumped the country and arranged addresses and discussions with provincial members. While larger member firms had their own capable and well-established export departments and overseas sales organisations, A.B.C.M. efforts had been to advise and stimulate export interest among smaller firms so that they also could plan to secure their share of a generally expanding trade.

In the belief that the future and expansion of the chemical industry was more important than national borders and trade tariffs, senior officers and officials had maintained good contact with representatives of the West European chemical manufacturers' associations. An information exchange centre had been established with headquarters in Zurich, and this arranged regular meetings of the directors of the various associations. It was hoped to arrange twice-yearly meetings of the respective presidents or chairmen. Matters of common value were discussed such as customs valuations, foreign investments in Europe (and not only U.S. investments), and dumping; while even tariffs, in abeyance at present, were not forgotten. Mr. Hickson added that he had attended one such meeting at Amsterdam recently.

The question of professional training was also being discussed to see if it was possible to get some European standard of measurement of qualifications.

This exchange of views should help A.B.C.M. formulate its policy in matters political and industrial for such times when they presented their views to Government representatives.

Industrialisation in other countries was not a development that Britain need worry about, declared Sir Cecil, replying to the toast. Our best customers were those that were best off and those were the countries that had developed secondary as well as primary industries.



On table B were, left, Professor H. J. Emeléus, president, Chemical Society, and Sir William Garrett (director, Monsanto Chemicals), new A.B.C.M. chairman

ABCM Officers Elected for 1959-1960

AS stated in CHEMICAL AGE last week, p. 479, Sir William Garrett, M.B.E., J.P., personnel director, Monsanto Chemicals Ltd., has been elected chairman of the Association of British Chemical Manufacturers for 1959-60. Mr. J. C. Hanbury (Allen and Hanburys Ltd.) has been elected vice-chairman.

New A.B.C.M. president is Mr. G. F. Williams, managing director, British Drug Houses Ltd. Vice-presidents are: Dr. F. H. Carr, C.B.E., Sir Roger Duncalfe, Dr. E. V. Evans, O.B.E., Sir Graham Hayman (The Distillers Co. Ltd.), Mr. B. Hickson (Hickson and Welch Ltd.), Sir Harry Jephcott (Glaxo Laboratories Ltd.), Mr. C. F. Merriam, M.C., and Sir Walter Worboys (Imperial Chemical Industries Ltd.).

Elected members of the council include the chairman, vice-chairman, hon. treasurer, Mr. J. L. Harvey, M.B.E. (The Fullers' Earth Union Ltd.) and the following: G. H. Beeby (British Titan Products); E. L. Bush (W. J. Bush and Co.); I. V. L. Fergusson (Evans Medical); W. K. McGavin (Shell Chemical); L. G. Matthews (Burroughs, Wellcome); P. D. O'Brien (Laporte Chemicals); F. S. Poole (Peter Spence and Sons); W. D. Scott (I.C.I.); E. Stein (Distillers); Dr. J. E. Taylor (Joseph Crosfield and Sons); B. White (A. Boake, Roberts and Co.).

Co-opted Members: J. C. Christopherson (Albright and Wilson); G. H. W. Cullinan (Shell Chemical); M. J. C. Hutton-Wilson (Associated Chemical Companies); J. H. Townsend (I.C.I.).

Regional Chairmen: London and S.E., T. W. Howard (Howards of Ilford); Midlands, Dr. W. Blakey (B.I.P. Chemicals); N.E., W. K. Hall, O.B.E. (I.C.I. Billingham Division); N.W., F. S. Poole (Peter Spence); Scottish, J. Angus (Scottish Agricultural Industries); S.W., H. L. Thompson (National Smelting Co.).

Hon. Vice-Presidents: C. E. Carey (South Eastern Gas Board); Lord McGowan, K.B.E. (I.C.I.); L. P. O'Brien and K. H. Wilson, O.B.E., J.P.

Director: George Brearley, B.Sc., F.R.I.C., M.I.Chem.E.; *general secretary*: A. I. Holden, B.Sc., F.R.I.C.

★ TESTIMONY to the help and advice that he had received as a young chemist from the officers who supervise the work of the Alkali Act was given by Mr. Bernard Hickson (Hickson and Welch Ltd.) when he spoke at the annual dinner last week of the Association of British Chemical Manufacturers.

His first contact with the officers was in 1912 when the factory in which he was acting as chief chemist was involved with a threat of an injunction from local authorities for emission of sulphuretted hydrogen. The local Alkali Inspector, said Mr. Hickson, not only clarified the legal position, but also gave much help in dealing with the technical problem of overcoming and minimising the nuisance. That, of course, was in the tradition of the Alkali Inspectorate.

Incidentally, the dinner marked a break with the usual A.B.C.M. procedure in that it followed rather than preceded the annual meeting. The a.g.m. is normally held on a Thursday, but rather than risk disenfranchising its members, A.B.C.M. decided to hold it on the Wednesday.

★ THE news that Fisons Pest Control Ltd. were withdrawing their sodium and potassium arsenite haulm destroyer (C.A., 10 October, p. 479) was issued on 3 October and followed swiftly a recommendation made on 1 October by the British Weed Control Council.

The Council recommended that manufacturers of these products should cease to supply them for use as haulm destroyers and for the destruction of agricultural weeds. They also urged the Ministry of Agriculture to withdraw approval for them under the Crop Protection Products Approval Scheme.

★ BRITISH Institute of Management tells me that the first International Congress of Scientific Management ever to be organised in the Pacific region by C.I.O.S—International Committee of Scientific Management—will be held in Australia from 22 February to 4 March, 1960. Two thousand delegates are expected from countries throughout the world. Among them will be Lord Verulam, chairman of the B.I.M.

Principal speaker will be Mr. R. G. Menzies, Prime Minister of Australia, who will open the second phase of the congress in Melbourne on 29 February with a paper on 'Management in a Developing Country', also the general theme for this session. Mr. Henry Ford II (U.S.) will open the first phase in Sydney on 22 February with the general theme 'Managements Methods in the Next Decade'.

In a statement on this congress, Sir David Eccles, says that "he welcomes the efforts of the B.I.M. to interest industry here in the congress; for neither our traditional skills nor our technological discoveries will today alone secure markets for British products overseas. To meet competition our goods must be produced with the maximum of efficiency and must be sold aggressively. Exchange of experience whether in formal session or in private discussions can be of the greatest help to those who seek to improve their standards."

Australia's rapid and extensive industrial development well qualifies her to be the host country for this congress. It is a particularly fitting choice for U.K. delegates for Australia is the U.K.'s second largest export market and is attracting more British capital than any other country, Sir David reports.

★ A NUMBER of accidents that could easily have been prevented led to a January-to-September accident frequency rate for the I.C.I. Heavy Organic Chemicals Division of 0.66—not so good as in 1958. They also led to a letter from the main board in London pointing out that the rate was above the I.C.I. average and suggesting that the division might do better.

Of the 14 lost-time accidents this year, three have been caused by chemical splashes in the eyes—and in each case goggles were being worn or had been discarded. Of 88 'significant minor accidents', 70 had been due to chemical splashes. Although it may be above the company average, this accident frequency rate is still low by chemical industry standards and will, in view of the unrelenting pressure to make workers more safety conscious, soon show an improvement.

Another large company that spends much time and money on accident prevention, is Fisons Ltd. Their Fertiliser Division labour officer now offers £2 2s for each safety-first suggestion used in the company magazine *Fisons Journal*.

★ THE century-long search for a dyestuff that would join cellulose and dyestuff by an irreversible covalent bond, which ended with the recent marketing of reactive dyes, has led to great activity among all dye-makers. Already there is a host of Belgian patents claiming special properties for all sorts of combinations of amino-hydroxy- and ether groupings on the triazinyl ring; so far, however, none of those dyes have proved quite so versatile and as interesting as the dichlorotriazinyl types.

This was stated by Dr. S. Coffey (I.C.I. Dyestuffs Division) when he gave his address as chairman of the Manchester Section, Society of Chemical Industry, on 2 October at the opening meeting of the session. Two important types were derived from dichlorotrianzinyl dyes by replacing one of the two chlorine atoms by another ether group or an amino group—giving monochlorotriazinyl types. These were in fact the basis of the Procion-H brands and Cibacron dyes.

Recent work has shown that there are quite a number of other systems; any polyfunctional system will suffice if it can be introduced into the dyestuff along with all the other groupings required, including colour-forming groups and the numerous SO_2H groups. Thus there are other heterocyclic systems, like the chloropyrimidines, the polyfunctional acids, halogenated alkyl groups associated with an amide group, difunctional reactive alkyl groups, dihalogenoalkyl ether groups, particularly those that could form a vinyl grouping by an elimination reaction. Although so far not much has been heard of these systems commercially, Dr. Coffey said it was obvious that much work had been done on them.

★ THE appointment of Mr. Russ as marketing manager of the General Products Group of Du Pont de Nemours International S.A., to co-ordinate the marketing and sales activities in Europe for a wide range of company products is announced in 'People in the News', p. 544. I learn from Mr. David H. Conklin, managing director, that this expansion of the company's organisation in Geneva is designed to provide a better and a more direct service to a growing group of customers in Europe and to broaden the uses of many Du Pont products.

Du Pont de Nemours International were established earlier this year to co-ordinate sales activities for products to be produced by the European subsidiaries, as well as for many products produced by the parent company in the U.S. Du Pont's first U.K. research facility was opened at Hemel Hempstead earlier this year; their first U.K. production plant for neoprene is due to be opened in Northern Ireland early in the New Year.

★ AN Indian manufacturer of chemicals and pharmaceuticals with what he describes as a 'large factory space and extensive machinery' writes to ask me if I know of any British manufacturer who would like to utilise these facilities. The firm concerned seek technical and other collaboration, along with the use of British patents, trade marks and marketing in India.

In view of the restrictions on imports of chemicals and drugs in India, it may be that a British pharmaceutical concern will find it worthwhile to produce their goods in India by arrangement with this firm. If so I will gladly put them in touch with the import representative, Mr. R. Subramaniam, of the firm concerned.

Alembic

Benn Bros. Chairman to Head I.T.A. Advertising Committee

THE House of Benn, which publishes CHEMICAL AGE, is particularly proud of the announcement this week that its chairman, Mr. Glanvill Benn, has been appointed by the Independent Television Authority to be chairman of the advertising advisory committee in succession to Mr. R. A. Bevan, who has held that office since the committee was formed in 1954.

Appointments of the committee are governed by the Television Act of 1954, which provides for a committee representative of organisations, authorities and persons concerned with standards of conduct in the advertising of goods and services to advise the Authority as to the principles that should be followed in television advertising.

Mr. Glanvill Benn's selection for this office is another addition to his work for maintaining the best standards in the advertising business. He has served on the council of the Advertising Association for many years and has been chairman of its finance committee for the past five. He is also a member of the council of the Audit Bureau of Circulations, which is the acknowledged authority for establishing circulations of newspapers and periodicals.

Mr. Benn, too, derives particular pleasure from his association with the National Advertising Benevolent Society of which he is a trustee with Viscount Mackintosh of Halifax and Viscount Leverhulme.

Chemicals and Cotton Research

THE fortieth annual general meeting of the British Cotton Industry Research Association will be held on 22 October. At members' days on Thursday, 22 October, and Friday, 23 October, the laboratories and experimental workrooms will show permanent finishes on starch derivatives and chlorite bleaching, removal of Procion dyes from cellulose fabrics and flameproofing of cotton.

There will also be a demonstration of the influence of polymer coatings on the radiation of heat from metallised surfaces. The apparatus on view will show that the amount of heat radiated from a metallised surface at skin temperature depends on the chemical composition of the polymer with which the metal is coated.

U.K. Chemical Production Runs at High Level

The Board of Trade index of industrial production shows a figure of 130 for June, compared with 127 for May and 115 for June 1958 (the average 1954 index figure is 100). The second-quarter 1959 figure is 126, an increase of nine points over both the second-quarter 1958 and the whole of 1958. Index for 1957 stood at 115 and for 1956 at 111.

HIGHER CHEMICAL SALES BY TWO I.C.I. DIVISIONS

Ardeer Dehydration Plant Leads to Cuts in Nitric Acid Costs

CUTS in the cost of nitric acid, improvements in acid usage and the benefits of a new dehydration plant at Ardeer have led to a "very substantial reduction" in the cost of making industrial nitrocellulose, thus greatly improving the competitive position of the I.C.I. Nobel Division. This was stated by Dr. James Craik, division chairman, when he recently reviewed production.

The new N.A.B. nitroglycerine plant at Ardeer is approaching completion and will start commissioning trials this month. I.C.I. have acquired the rights of this process for the Commonwealth.

Among new projects at Dumfries, the methyl cellulose plant was progressing and certain sections were now being commissioned. The new plant at Dumfries had settled down to routine production of paraformaldehyde flake.

At Ardeer, the construction of a weak nitric acid plant to operate by the intermediate oxidation system was advancing steadily. Much of the plant was on site, more was expected soon. It was planned to commission the whole unit during the late spring or early summer of 1960.

A second nitric acid concentration unit using the magnesium nitrate process had been approved for installation at Ardeer and the site was now being cleared.

Improvement in pentaerythritol plant efficiencies were being reflected in a reduced cost of the product.

Referring to sales, Dr. Craik said that despite growing competition, there were reasonable prospects that 1959 would see an all-time record in sales of nitrocellulose. Largely as a result of Canadian imports, the pentaerythritol market had remained competitive, but sales were only a little below last year. Sales of silicones so far this year were higher than in the corresponding period of 1958.

With one exception, potassium nitrate, sales of all the major chemical products were being well maintained. Deliveries of nitrocellulose were well up on last year with increases in most of the bigger markets, and with the improved pentaerythritol supply position large quantities could be offered for export. There had also been a higher export level of sales for barium nitrate.

Mr. Leslie Hall, a division joint managing director, stated that the fall in coal output and increased mine mechanisation had reduced the demand for the division's products. By 1962, he thought there would be a drop in demand for the division's explosives in deep mining by something like 10%. Increased demand was expected from the road-building programme and from iron ore mining.

In export markets they were meeting greater competition and in many territories there had been a demand for self-sufficiency. Although India's demands had more than doubled over the last 20 years, most if not all requirements would be gradually met by production from the recently erected factory at Gomia. This pattern was being repeated elsewhere.

Mr. Hall stressed that there were large and continuing markets for explosives and accessories both at home and overseas and he could see no reason why the division should not participate in them fully, if not to quite the same extent as in the past few years.

H.O.C. Division Seeks Bigger Fields to Reduce Dependency on Plastics

NOW looking into ways of improving some of their processes, the I.C.I. Heavy Organic Chemicals Division is also looking to see if it "can move into rather bigger fields than we are in at present". This was stated by Dr. S. W. Saunders, division chairman, when he addressed a meeting last week of Oil Works and Olefin Works Councils.

"Some of us feel", he said, "that we should like to have further interests so that if there is any fall-off in fibres and plastics fields, we should have something more to fall back on". Dr. Saunders had told the meeting that about half of the division's capacity was used to meet the demands of Plastics Division and that about three-quarters of its total business was with the fibres and plastics industries.

In the last six months the division's demand for ethylene had gone up more than had been expected, as had demand for para-xylene and most of the division's other products. Outputs were running at a high rate and so far as they could see that would continue.

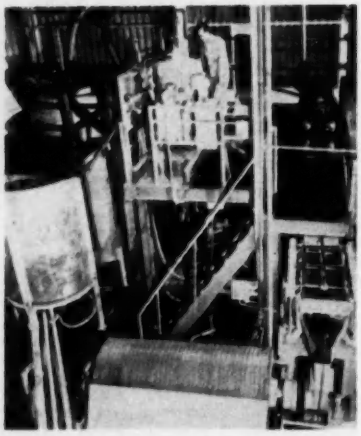
Mr. D. M. Bell, division commercial managing director, spoke of the importance of always running plants at full or almost-full capacity. "That last little bit you can get out of a plant almost pays for everything. . . . If you are running a plant at 90% of capacity for most of the time you are not doing so badly." In the next six months the division should with one or two exceptions be able to sell all it could make.

Detection of Nitrous Fumes

H.M. Stationery Office has reprinted two booklets in the series of methods for detection of toxic substances in air. They are No. 5—Nitrous Fumes, and No. 10—Chlorine. Each costs 1s 3d (by post, 1s 5d).

B.G.C. IMPULSE PROCESS FOR PROTEINS GIVES CHEAPER OIL

IMPULSE rendering of vegetable matter to yield edible protein is now possible using British Glues and Chemicals' process (see CHEMICAL AGE, 19 September, p. 343). Discussing some points at a special technical press meeting recently, Mr. I. H. Chayen, assistant managing director and inventor of the



The I.P.P. process being applied to leaf material. Conveyor belt takes the leaf to the impulse renderer (left), where alkaline water is fed in simultaneously. In less than a second the vegetable cells are shattered. Fibres and protein solution run off from the impulse renderer

present process, indicated that yields from 100 tons of average quality groundnuts produced about 22 tons protein, 44 tons oil and 18 tons starchy materials. Remaining percentages were accounted for by loss of water (about 6%) and by loss of soluble sugars such as lactose.

From 100 tons of fresh grass (about 80% water content) with an initial nitrogen test of 3.5% on a dry basis, some 2¼ tons of pure protein could be made, about 7 tons of fibre suitable for making hardboard, and 0.6 tons 'chlorophyll syrup'.

'Chlorophyll syrup', a completely new substance obtained in the course of dehydrating grass protein by solvent, is stated to contain chlorophyll, carotene, xanthophyll, vitamins A and D, possibly vitamin E, sterols, steroids and hormones. It is thus of great potential importance.

The process for extracting protein from groundnuts can stand on its own merits, British Glues state, when considered only as an oil-extraction process. Less oil is produced, but it is cheaper, and two-thirds of it need no further treatment.

Types of food into which vegetable protein can be incorporated are: (a) White or slightly coloured protein such as that from oilseed could basically go into cereal, flour, mealies, rice, sago, etc. —enough to provide 1 to 1½ oz. daily as a supplement. (b) Leaf protein could well be used in soups, curries, flavoured materials, meat paste, or sausages. (c) In the case of India, where ghee was used throughout the country, the vegetable protein could be incorporated in ghee on a scale sufficient to supplement the diet of the whole sub-continent.

The initial capital cost of installing an impulse process protein plant would work out at about 10s per head of population.

£500,000 Fire at Fibreglass Works

DAMAGE estimated at £500,000 was caused when fire destroyed part of an office block, a loading bay, and five sections of a warehouse at the Ravenhead works of Fibreglass Ltd., at St. Helens on 12 October.

The fire, which started in the early hours of the morning, was the fourth at warehouses of St. Helens glass factories in the past three months.

Two trains, each containing seven wagons loaded with parcels of fibreglass, were destroyed, and thousands of pounds' worth of fibreglass and packing materials destroyed in the warehouses.

Progress Reports on Crosfield's Calcium and Aluminium Silicates

TO BRIDGE the gap between technical appreciation and industrial application, Joseph Crosfield and Sons Ltd., Warrington, are publishing progress reports on their products. These reports, Crosfield state, are prepared, in an effort to stimulate further considerations of their products in customers' own formulations. The first two, now available, give comparative data on calcium silicates and aluminium silicates respectively.

Progress Report No. 1 on Calcium Silicates gives comparative data on Crosfield's fine calcium silicates, Microcal 160 and Microcal 210. These have been compared with three competitive calcium silicates of British, U.S. and German origin. Standard natural and resin formulations were used.

Considering overall properties, Microcal 160 compares favourably with the other materials. Similar to the U.S. product, it was found to have the advantages of faster cure rate and easier incorporation on the laboratory roll mill in both natural and resin rubber compounds. Microcal 210 was similar to both British and German products, but imparted, it is said, better compression and tension sets in the resin rubber compound of all the silicates investigated. It is also stated to be more easily incorporated on the laboratory roll mill than the other similar silicates.

Alusil 165 and Alusil 215 are Crosfield's fine aluminium silicates. In Progress Report No. 2 they are compared with three competitive aluminium silicates of British, U.S. and German origin, employing both natural and resin rubber formulations. Test results for natural rubber compounds are said to show that Alusil 165 had the best balanced tensile/hardness properties at 15 minutes cure time with further improvements at 30 minutes. Also Alusil 165 has been found to possess the highest Mooney viscosity of the group, while yet accompanied by a reasonable modulus in the cured state. It does not therefore produce as stiff a vulcanisate as some of its competitors.

Alusil 215 does not have high tensile properties, but is easily processed by virtue of the very low Mooney viscosity of its compounds and, in addition, has very satisfactory set properties. The British aluminium silicate has been shown to be nearest to Alusil 165 in reinforcing properties except that it is much slower curing, and the U.S. and German products similar in set properties to Alusil 215, although developing a lower level of tensile properties than Alusil 165.

With resin rubber compounds Alusil 165 has been found to give the best balanced tensile/hardness properties of the group both at 20 and 40 minutes' cure time. It has a rather high Mooney viscosity in the uncured state and relatively high set values. Set properties can be much improved, it is stated, by judicious choice of the accelerator system; particularly useful in this connection are guanidine-thiazole accelerator combinations.

As in the natural rubber formulations, the U.S. and German aluminium silicates were found to be very similar to each other.

As Alusil 215 gives the lowest Mooney viscosity, it is the easiest processing aluminium silicate of the group. Crosfield claim also that it has the best level set properties and is similar at 40 minutes' cure time in tensile/hardness properties to the U.S. and German products.

Epoxy Resins for Boiler Wall Lagging

A NEW use for Araldite epoxy resin, made by CIBA (A.R.L.) Ltd., Duxford, Cambridge, is in the lagging of a large boiler wall at the Steller North Power Station, near Newcastle upon Tyne. The insulation has been finished with asbestos cement, to which p.v.c. fabric has been bonded with Araldite.

This method of lagging, which was carried out by the Darlington Insulation Co. Ltd., has proved to be the most satisfactory, it is stated, and is about one-third the cost of the normal process of metal cladding. The Araldite and p.v.c. combination was found suitable for withstanding the outside temperature of the boiler walls and flexible enough to cope with boiler expansion.

Gas Council Now Considering Technical and Economic Aspects of Large Scale Imports of Methane

BRITAIN'S gas industry had a deficit of £1,466,882 (surplus of £2,820,610) on a gross income of £389.6 million (£388.6 million) in the year ended 31 March 1959. This is the first year since vesting date in which the industry has had a deficit. The deficit is stated in the 10th annual report of the Gas Council to be partly due to the decline in gas sales resulting from the industrial recession and the relatively mild weather, partly to increased costs. Seven area gas boards incurred losses while five boards had a surplus. Total income from gas sales was £225.6 million (£222.8 million), from coke and breeze sales £88.1 million (£94.7 million), and from other products £21.5 million (£24.5 million), from sales of appliances £37.0 million (£29.2 million) and from other sources £17.4 million (£17.4 million).

Investment for the gas industry for 1958/59 was £53.5 million. Actual expenditure by the industry on fixed assets during the year was £46.1 million. The underspending was due mainly to delay or revision or a number of projects for gas-making plant, and the slowing-up or deferment of a number of main-laying projects. Capital expenditure during the year on manufacturing plant was £16.7 million.

Total capacity of gas-making plant brought into use was 107 million cu. ft./day; capacity of plant scrapped and abandoned was 130 million cu. ft./day, of which 96 million cu. ft. was coal-using plant. Oil gasification units account for 71 million cu. ft. of the new capacity and coal-using plant 31 million cu. ft./day.

Methane Imports

Imported Liquid Methane. Three trial voyages bringing liquefied natural gas to this country have been completed. Further voyages are to be made. After allowing for losses during the voyage and conversion processes, net quantity of gas available is about 480 therms per ton. Equivalent capacity of a trial shipment is therefore a little short of one million therms. Such small shiploads, the Gas Council report, are not economic and consideration is now being given to the technical and economic aspects of importing methane on a large scale.

High Pressure Processes. Site preparation work at the Partington Production Station, where the commercial scale plant for hydrogenation of oil or coal at high pressure is to be built by the Council and Humphreys and Glasgow Ltd., is well advanced. Delays have occurred, however, in the design of the plant for the first stage of development, which is the hydrogenation of oil.

When the plant has operated successfully on oil, it will be adapted to use coal. The report indicates, however, that it may not be economic to hydrogenate coal completely and it may prove preferable to carry out only the initial rapid hydrogenation leaving a coal char, which will also be used. A tentative scheme is to gasify this with oxygen-steam in order to obtain the necessary hydrogen.

With regard to the research work of the Council's Research Station, on new processes for gas making the Council have decided that much of the work is at a sufficiently advanced stage that it could be developed commercially. The Council has therefore entered into agreements with the following six companies under which they are licensed to build commercial plants at home and abroad covering developments relating to production of gas from coal or oil which are characterised by operation under a pressure of several atmospheres:

Woodall-Duckham Construction Co. Ltd., Humphreys and Glasgow Ltd., Henry Balfour and Co. Ltd., Power-Gas Corporation Ltd., Simon-Carves Ltd., and West's Gas Improvement Co. Ltd.

Each company will co-operate in the development of the processes devised by the Council's research staff to pilot-plant stage. Each company may then produce its own version of the plant on a commercial scale.

Research Efforts

Research Programme. Main effort in the research into new methods of gas manufacture is directed towards the development of processes for production of gas at high pressure from low grade coals and from oil.

In some areas there may be no advantage to be gained from production of gas at high pressure, and a continuing effort is therefore being devoted to total gasification at near atmospheric pressure.

Carbonisation. During the year the most important work carried out has been in connection with the problem of the flaking of refractories in continuous vertical retorts.

Gasification Research. Experimental plant for gasification of oil with highly superheated steam at the Stratford Works of the North Thames Gas Board has been completed and has operated on gas oil under a variety of conditions. The oil reacts rapidly with steam at temperatures above 1,250°C, but if all the heat requirements are supplied by the sensible heat of superheated steam the process is not economic. If some heat is provided by radiation from hot brickwork, operating temperatures are lower, gas made is of better quality and overall efficiency is higher. Yields of the order of one therm per gallon of oil have been reached. Some free carbon is produced, so to retain this carbon in the system and use it as fuel during the combustion stage of the cycle, the secondary reaction chamber has been packed with checker brick.

High Pressure Coal Gasification. Work on the use of British coals in the Lurgi process has been almost completed. This has included a study of the reactions occurring in the fuel bed and of the saving of steam and oxygen by using enriched air. It is hoped that further work will be carried out on the full-scale plants which are being installed or are planned to be installed by the Scottish and West Midlands Gas Boards. Possibilities of improving the non-slagging Lurgi process are being studied.

Oil Gasification at High Pressure. The large scale experiment at Partington is proceeding (see above). At the Midlands Research Station work is being carried out with a view to providing the basic information required to design the hydrogenation. An important later phase of the Partington experiment will be to try to obtain the hydrogen by catalytic reforming of part of the rich gas made in the hydrogenation. And work on the design of the necessary pressurised reformer has been started at the station.

Hydrogenation of Light Distillate. This process can be operated to produce either gas and benzene of high purity as by-product, or to produce gas alone. Work on the second method is now completed and design of a full-scale unit could be undertaken. It is hoped to bring the first process to a similar stage during 1959/60. Applications for these processes are: (a) for gas enrichment (e.g. on Lurgi plants); or to produce a complete town gas, obtaining hydrogen by reforming part of the output.

Catalytic Process. For production of peak-load gas at pressure there is direct reaction over a catalyst of light distillate or refinery gases and steam. A pilot-plant with an output of 200,000 cu. ft./day has been designed.

H_2S Removal

Gas Purification. A considerable amount of work has been done in connection with the design of improved condensers and coolers for removal of tar and naphthalene. Removal of carbon dioxide and hydrogen sulphide from gases produced in some of the new processes under investigation results in formation of a mixture of CO_2 and H_2S during regeneration of the liquid reagent used for their removal from crude gas it is reported. To recover sulphur from the gases three catalytic stages are necessary. (1) For initial oxidation of part of the H_2S, it is essential to use a catalyst which leaves no residual oxygen in the treated gas. Several metal sulphates, notably those of nickel, zirconium and calcium, on supports such as alumina, have proved satisfactory. (2) In the second stage where sulphur is formed by interaction of H_2S and SO_2, the usual alumina catalyst is successful but is poisoned by free oxygen. Titanium dioxide is also active and is more re-

sistant to this poisoning. (3) For final oxidation of traces of residual hydrogen sulphide the best catalyst has been found to be one made from mixed sulphates of copper and cadmium deposited on activated alumina.

This work is now ready to go on to the pilot scale, and the Gas Council hope to carry this out, in collaboration with the Scottish Gas Board, on some of the gases produced from the Westfield, Fife, Lurgi plant.

Effluent Disposal. Much of the research at the London Research Station and Leeds University is being devoted to the problem of treating ammoniacal liquor effluents. Principal impurities are phenols, thiocyanates and thiosulphates. In co-operation with the Birmingham Tame and Rea District Drainage Board, the West Midlands Gas Board is conducting research into particular aspects of the impurities in effluent which tend to inhibit biological oxidation.

At the London Research Station a design study for full-scale biological oxidation of phenols and thiocyanates has been carried out. Curves for efficiency of biological oxidation of spent undiluted liquor in tank systems over a wide range of loadings has been completed and published. The work is now being extended to cover various other types of liquor. An experimental plant has been erected to study the biological oxidation of thiosulphate obtained in effluent from the Onia-Gegi process.

At Leeds University, an improved method for biological treatment of coke oven effluents has been developed.

Gas Council Research. In the course of Lurgi process studies, it became clear that there would be advantages in developing fixed bed gasifiers if the ash could be withdrawn as molten slag. Experiments on such a process are now being conducted in conjunction with the Ministry of Power.

Studies have been made of the hydrogenation reaction in fluidised beds, since it is thought that such a process will be superior to fixed bed gasification because it will gasify coal smaller than that which can be used in fixed beds, and the gas produced will not require enrichment. It also offers the possibility of reforming part of the rich gas leaving the generator, in order to provide the hydrogen required, and so avoiding the necessity for the supply of oxygen. Oil, it is found, can be more easily gasified than coal. The Council has therefore arranged for the North Western Gas Board to instal, on its behalf a large-scale pilot plant for production of gas by hydrogenation of oil. It will have an initial capacity of 7½ million cu. ft./day. Once the operation of the process is established, the plant will be adapted for hydrogenation of coal.

At the London Research Station a process for gasification of oil at atmospheric pressure by reaction with superheated steam has been developed and a pilot plant has been constructed at the Stratford works of the North Thames Gas Board.

Chemical Output Trends in Gas Industry

IN general, the home market for the various chemical products produced by the gas industry during the year ended 31 March 1959 was not strong and the trend in export business was one of falling demand due principally to increased competition and the recession in the U.S.

Tar Products. Production of crude tar totalled 1,832,000 tons, a reduction of 85,000 tons on the previous years. Of the tonnage produced, 1,398,000 tons were sold, mainly to co-operative distillers and the remainder distilled by area boards.

Refined tar for road work continued to be the most important basic outlet. Exports of refined tar to the Continent were low and economic difficulties and competition from bitumen combined to make 1958/59 one of the most "trying" years yet encountered by the Gas Council. Shipments in drums to New Zealand were a prominent feature.

Coal tar fuels have suffered severe competition from petroleum fuel oils with prices being continually reduced. Demand for pitch for briquetting works has weakened, hence greater interest is being shown in production of special industrial pitches.

The light creosote contract with I.C.I. for manufacturing motor spirit has been terminated after 25 years. Other outlets have had to be found for this oil, an example being installation of a distillation unit for separating the oil into saleable components. Changes in the overall character of gasworks' crude tars have made it increasingly difficult for oils derived from these tars to be exported to the traditional U.S. market, it is stated. Considerable quantities of wood preserving creosote, however, are now being exported to Europe.

The refined chemical products, naphthalene, phenols and pyridines, have been fully sold, against keen competition from East European countries. Production of refined phenols, by the North Thames Board reach a record level of 6,300 tons.

Benzole. Area Boards extracted 25,266,000 gall. of benzole, 2,570,000 gall. less than in the previous year. Of the total production, 17,095,000 gall. (67%) was used by Area Boards mainly for refining, while the remainder went to co-operative distillers.

Home demand for benzole products remained generally steady throughout the year, against reduced production of crude benzole. Demand for pure benzene for chemical synthesis continued to be very strong, although this product cannot be produced from low-gravity gasworks' crude benzole without using specialised techniques.

Ammonia. Gas liquor now presents a disposal problem, it is reported. Prices obtained for sulphate of ammonia and liquid ammonia are regulated by those ruling for other competitive materials, both at home and abroad. Even on the large scale of operation employed by certain area boards the profit margin has declined and does not offset the cost of handling and transport.

Gas liquor continues to be used in some areas as a fertiliser for direct application to land. Transport considerations prevent it being a satisfactory market for a large part of the liquor produced by boards mainly in industrial areas.

Spent Oxide. The market for this product is stated by the Gas Council to be seriously deteriorated with increasing supplies of sulphur in various forms, becoming available at steadily decreasing prices. There is now a growing disposal problem. Export with the Continent in spent oxide, upon which the U.K. industry relied to dispose of surplus quantities is dying out in consequence of the readily available supplies of sulphur from the natural gas project at Lacq.

Gas Council Plan Bigger Methane Tankers

AT A PRESS conference on the Gas Council's report, Sir Harold Smith, chairman, stated that to date the 2,000-ton *Methane Pioneer* has made five voyages. The experimental work already done on liquid methane has convinced the Council that this material is suitable for gas production and within a few weeks it hoped to present to the Minister of Power its plans for building two 10,000-ton tankers (or possibly one 20,000-ton tanker) for importing liquid methane to the U.K. If the scheme to build such tankers is approved the saving is likely to be 2 million tons of coal a year. (Last year the industry used 24.3 million tons of coal.

B.S. Glossary of Work Study Terms

A NEW British Standard, B.S. 3138, published on Monday, provides the basis for a common language among the many thousands in Britain who are concerned with the application of work study. The new standard glossary has been seven years in the making. Drafting was in the hands of a specialist committee under the chairmanship of Mr. R. M. Currie, head of the I.C.I. Central Work Study Department and acting as representative on the committee for the Federation of British Industries.

The new glossary comprises 38 pages. Part 1 begins by defining three general terms: 'work study,' 'method study' and 'work measurement.' Part 2 defines terms recommended for use in method study. Part 3 contains a large number of terms and definitions relating to work measurement.

Copies of this Standard may be obtained from the British Standards Institution, Sales Branch, 2 Park Street, London W.1, price 7s 6d (postage extra to non-subscribers).

Safety in the Chemical Industry

Methanol Detection at Price's Emersol Plants

IN the production of their Priolene and Pristerene ranges of oleines and stearines, Price's (Bromborough) Ltd. employ a solvent separation process under licence from Emery Industries Inc., Cincinnati, U.S. Price's operate in parallel two Emersol plants, and when first introduced they presented the company with a number of safety problems. Among these was the need to protect the staff from the possible hazard of toxic vapour arising from the use of methanol as the solvent.

At the time no commercial detector was available which would give the protection that was thought necessary, and with the co-operation of the research department of their parent company, Unilever Ltd., the methanol detector, construction and operation of which is described below, was devised and installed.

Methanol in the atmosphere of the Emersol plants is detected by sequential sampling of the atmosphere at 10 predetermined stations, five in each plant, and a visual warning is given if the concentration exceeds 200 p.p.m., and an audible and visual warning if it exceeds 1,000 p.p.m. The concentration at each station is also recorded. To give the maximum reliability duplicate detecting systems, amplifiers and alarm circuits are used to operate the remote and local alarms and duplex recorder. The complete equipment is housed in one cubicle (Fig. 1).

Methanol is detected by catalytic conversion to CO_2. The concentration is estimated by the change in CO_2 level with a commercial infra-red gas analyser. This method gives good sensitivity and immunity from false operation due to other industrial vapours, especially water vapour.

Description of Equipment

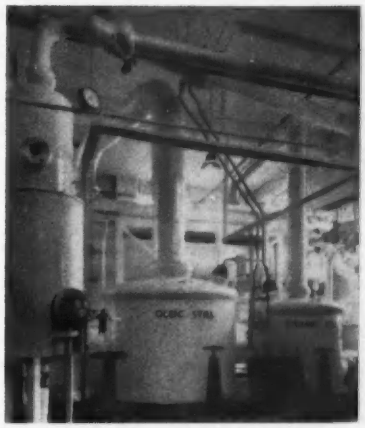
Gas Flow. The plant atmosphere is drawn continuously by a pump from all the 10 stations, and sequential inspection is provided by temporarily diverting the atmosphere from any one station through the analysis system instead of directly exhausting it. This selection is obtained by 10 two-way valves operated by a cam, giving one complete cycle in 17½ minutes, i.e., 1¾ minutes for each station. A switch is mounted on each valve to operate the various electrical circuits. Gas flow is shown in Fig. 2.

Detecting System. The atmosphere under examination is divided equally into two flows, one flow passing through a heated combustion chamber containing platinum gauze catalyst discs which converts the methanol to CO_2. The other flow passes through a flow equalising chamber which has the same pneumatic resistance and capacity as the combustion chamber, to ensure correct phasing which minimises false alarms. These two flows then pass through the two sample tubes of an infra-red gas analyser, to the pneumatic detector cell.

If the CO_2 concentration is the same in each sample tube, absorption of the infra-red radiation in each will be equal, and hence the pressures each side of the flexible diaphragm is equal and no deflection occurs. Any inequality in CO_2 results in a deflection of the diaphragm, and this deflection is made pulsating by means of the motor driven chopper which interrupts the infra-red beams passing down the tubes. Any pulsating of the diaphragm is detected by a capacitance measuring technique. It was found that the stability of the commercial model was not sufficient for continuous industrial operation and a circuit was developed which automatically compensates for the long term drift of instrument.

Basic arrangement of the detecting system is shown in Fig. 3.

Electrical System. To allow the detecting system to be purged of atmosphere from the previous station, a 'station delay' network is used which for the first half minute of each examination period removes the signal from the recorder amplifier and alarm detectors. The recorder during this interval is at zero and hence a marker is obtained on the chart between stations. To further identify stations at each examination of No. 1 station a chart marker circuit produces fall scale deflection on the recorder for 5 seconds during the purge time. By this means a definite mark is made on the chart at the beginning of each cycle and also between stations, and thus the concentration at any station can easily be read off the chart.



View of the Emersol plant showing the upper part of the stills where the solvent (methanol) is removed from the oleines and stearines and recovered for future use

The signal from the gas analyser after suitable amplification is fed to the recorder and slave indicator, and also to the alarm detectors. The 200 p.p.m. alarm is such that this concentration must be maintained for a total of 30 seconds during any one examination period before the alarm is operated. The 1,000 p.p.m. alarm is such that this concentration must be maintained for five seconds before the alarm is operated.

The relay circuits are so arranged that if either or both alarms and local indicators are operated when examining any one station, they are maintained until that station is re-examined on the next cycle. This enables the plant operator when passing to note at which station alarms are operative without having to wait for a complete cycle and noting at which stations alarms occur.

Construction. As can be seen in Fig. 1, all operational controls are brought

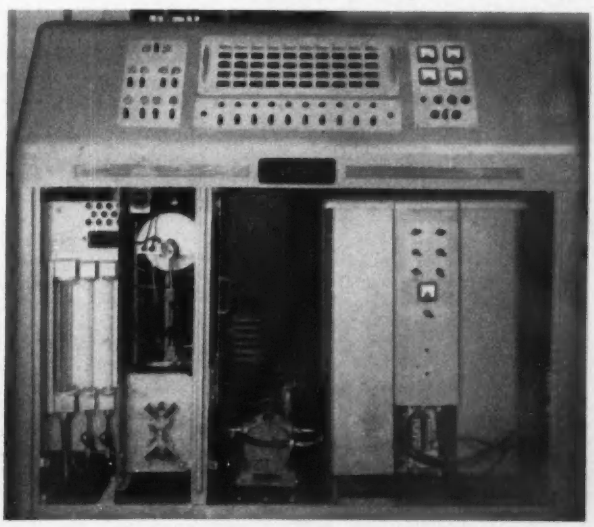


Fig. 1. Methanol detector with the front plates removed to show the interior. Samples of air are drawn in and tested automatically at fixed intervals. An alarm sounds if a dangerous concentration of methanol is detected

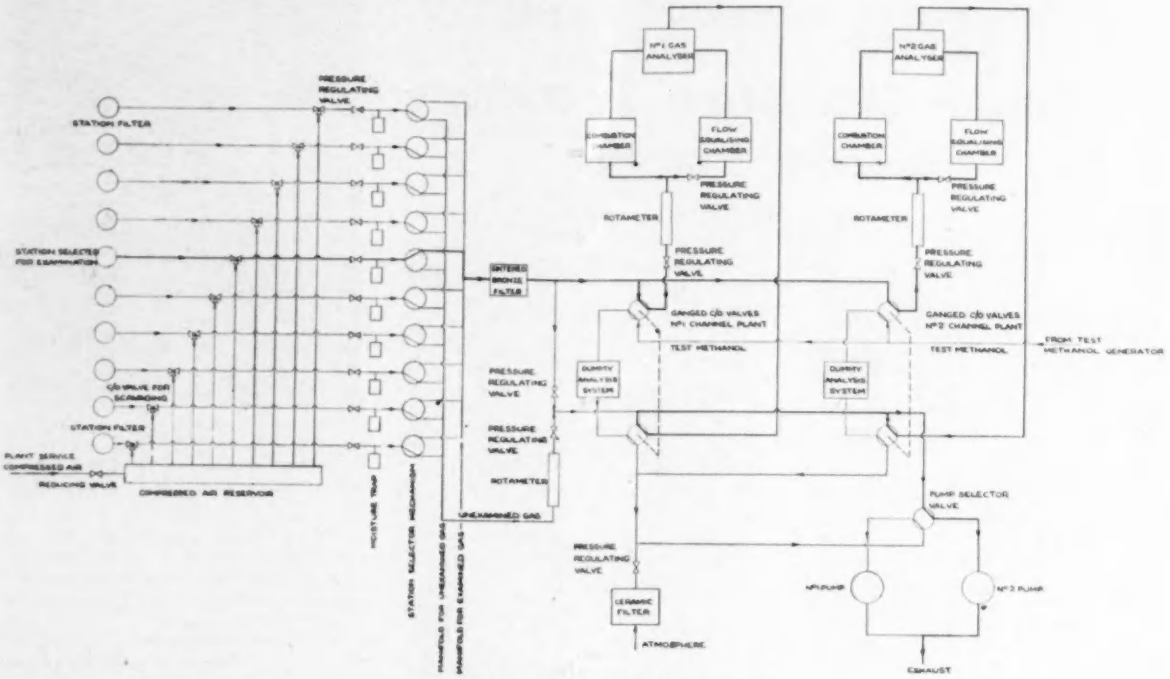


Fig. 2. Diagram of methanol detector

out to the sloping front of the cubicle. The left hand panel contains the various switches and indicator lights for the various electrical units. The right hand panel contains slave indicators for the recorder, as well as temperature indicators for the combustion chambers and also three lamps and push buttons by means of which the station relay circuits can be tested.

The main panel in the middle has 10 vertical rows of five lights, the top row indicates which station is under examination, the second row indicates the 200 p.p.m. alarms, the third 1,000 p.p.m. alarms. A local buzzer is fitted inside the panel for the 1,000 p.p.m. alarm and when this alarm comes up, push buttons are provided for each station to cancel the buzzer as the alarms occur, the fourth row of lights indicating that the station alarm has been cancelled. Switches are also provided to cancel the remote alarms for each station; operation of any of these switches brings up the appropriate light in the fifth row.

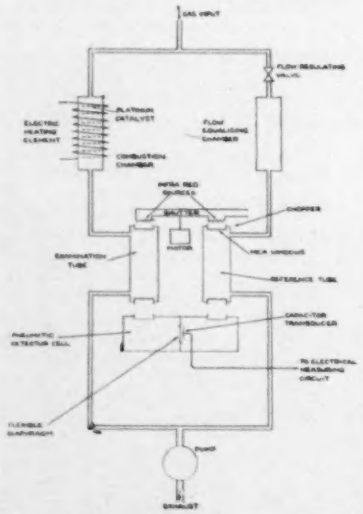


Fig. 3. Arrangement of gas analyser and combustion chamber

Testing Facilities. Built into the equipment are means to check the relay circuit operation, and also to monitor the anode current of all radio valves in the equipment as well as the voltages of the various power units.

For periodically checking the operation of the complete detector two test units are provided. One simulates the electrical output from the gas analysers and is used to check the operation of the alarm detectors and recorder amplifier. The second unit generates known concentrations of methanol/air mixture by means of which complete calibration of the detector is possible. The latter is permanently connected into the detector system and by operation of various valves, either or both of the detecting systems can be taken out of normal operation and checked. During this testing switches on the above valves disconnect the remote alarms circuits and also suppress the various chart marker circuits.

Two fixed test points are also available in each of the plants, one upstairs and one down to which a portable sample point with methanol concentration meter can be plugged in, and can be carried round the plant to trace small leaks, etc. Normally only one channel of the detecting unit is used for this, the other channel operating normally.

Chemical Age Survey of New Safety Equipment and Apparatus

FLAMEPROOF ELECTRONIC TANK GAUGE

A NEW model of the Gilbarco electronic tank gauge for use on deep storage tanks, is shortly to be available from **Firth Cleveland Instruments Ltd.**, Stornaway House, Cleveland Row, London S.W.1, a member of the Firth Cleveland Group. The new model, CMB 107U, is housed in a ductile iron case and meets American Class I Group D, Division I requirements for flameproofness. Official approval of this model has been granted by the Underwriters Laboratory of Chicago.

The new model retains all the features of the old, including accuracy in the field to 1/16 in, and in the laboratory to 1/64 in. The gauge reads the true level of the liquid in feet, inches and sixteenths, regardless of its specific gravity. It is power-actuated to overcome the effect of varying friction in pulley sheaves, and the variation in the weight of the measuring element at high and low liquid levels. It can be adapted to almost any type of remote transmission, and provides the basic accurate data necessary for a co-ordinated system of remote transmission. The gauge can be equipped for automatic selection of temperature averaging resistance ther-

mometers, and can be fitted with high and low level alarms.

All metals and other materials used in the gauge are selected to resist corrosion. It can be installed, serviced, recalibrated and maintained without taking the tank out of service. The gauge may be installed to measure water level or the interface of two products. In multiple storage tank installations, the gauge on each tank can be connected to a Firth Cleveland Gilbarco null-balance receiver for remote liquid level and average temperature readings. The standard receiver is equipped to read this data from 30 tanks. An air-purged version can be supplied for mounting in hazardous areas.

NASHTON FLASH TESTER

THE Nashton flash tester has been added to the range of miniaturised electronic test equipment, produced by **Nash and Thompson Ltd.**, Chessington, Surrey. Providing a 50 c/s a.c. test voltage variable from 500 to 2,000V in 16 100 volt steps, the instrument is designed for insulation testing to B.S. 816-1952.

The instrument is housed in the Nashton case with the shielded probe clipped to the right-hand side. The test voltage is derived from the high voltage secondary of a transformer via a current limiting circuit, and is varied by a 16-step plus 'off' rotary switch connected to the primary winding of the transformer. The applied voltage and the associated leakage current are indicated on a 4½ in. rectangular, 1mA, moving coil meter, the appropriate meter scale being selected by a two-position switch.

To ensure safety in operation the probe tip is shielded by a spring-loaded insulating sleeve which is retracted when required for use. The maximum short circuit current is 4mA which is below the hold-on value.

PACKS PROTECT DELICATE PRODUCTS

MANUFACTURING highly resilient packaging moulds to individual order at their new London factory, **Proteccopack Ltd.**, Lee Conservancy Road, Eastway, London E.9, claim that the packs ensure complete protection for the most delicate products and that they are economical, cut space and packing time. The moulds have been submitted to the most stringent Ministry tests, and the company's research shows that filled Winchester bottles, packed in their moulds, can safely be dropped on to concrete from a height of 50 ft. without damage, and that fragile goods can withstand loads of 1,000 lb. stacked on top of them.

Winchester bottle in a Proteccopack mould

PROOFED NYLON CLOTHING

A NEW development in protective clothing from **Heafield Industries Ltd.**, Spa Lane, Derby, is a range of proofed nylon and Terylene protective clothing said to be light, tough and efficient. Ventilated for comfort, long coats, boiler suits, overalls and other forms of garment can be made up from both fabrics. Weight is about 5 oz. per sq. yd.

The proofed nylon material is resistant to alkalis and to some mild acids. The method of proofing is said to overcome seepage to the wearer's clothing when heavy splashing is involved; it also makes the garment impervious to liquids, even under pressure. The proofed Terylene garments are resistant to most commercial acids.

ERFOL SAFETY VALVE

NOVEL feature of the Erfol safety valve, marketed in this country by **Orthos (Engineering) Ltd.**, 62 Coventry Road, Market Harborough, Leics, is a metal foil between the valve cone and seat which acts as a rupture disc, insulating the safety valve from the vessel and making the valve absolutely tight. When the valve comes into action, the foil is destroyed and the valve then acts as a normal safety valve. To make it tight again, a new foil has to be inserted which requires very little time.

Various types of Erfol safety valves are available to suit particular requirements in the chemical industry. They are supplied with lead, tin, aluminium, silver, gold foils, etc., or a combination of these. Parts under pressure in standard valves are in V4A stainless steel. Incrustations and corrosion of the valve seat, cone and outlet channel are said to have been eliminated. As long as the foil is intact and no matter can leak through, no crystallisation or corrosion can take place. For supervising the absolute tightness of the foil, an indicator can be built into the outlet and will show bubbles as soon as the foil is not working properly.

This safety valve is particularly suitable for certain processes in small vessels or in completely enclosed plants where certain pressure has to be maintained. In these cases it acts as a safety device preventing leaks or loss of matter through negligence which often endanger the whole process. Standard Erfol safety valves also seal the vessel in the reverse direction when for some reason the outside pressure exceeds that inside.

ISOTOPE TRANSPORT CONTAINER

A NEW isotope transport container designed by **M. Falk and Co. Ltd.**, Emefco House, Reigate, is approved by the Ministry of Transport and Civil Aviation under Authority A.S./42/2/01 and is said to be the only type of commercial container so far authorised. It is completely fireproof and arranged in such a manner that containers can be stacked on top of each other to save storage space. Inside the container is a lead ball supported in an inner steel drum which is braced on to an outer drum, also made of steel.

Isotope transport container

Designed to assure the world wide isotope supply service operated for M. Falk and Co.'s customers using gamma radiographic machines, these containers will take the standard Harwell cobalt, iridium, thulium and caesium capsules as well as the isotope capsules made in Canadian or European reactors. One type of container is fitted with suitable cavities to accept the standard gamma radiographic isotope holders of gamma-rays machines with the isotope already fitted into the holder while the other type is constructed to accept only the capsule. The containers are available with facility to carry either one or two isotopes and although the outside dimensions are identical for all containers, they vary internally according to the load.

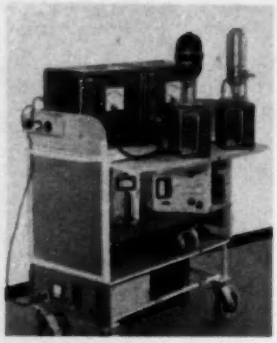
Although the heaviest container for the highest activity weighs 335 lb. (150 kilos) and the lightest container weighs only 60 lb. (27 kilos) for the same outer dimensions, the floor pressure does not exceed the allowed maximum for transport in commercial aircraft.

MOBILE RADIATION MONITOR

ONE of the requirements at the C.E.R.N. Nuclear Research Centre, Geneva, is the routine monitoring of radiation from the 50 MeV proton linear accelerator and the 600 MeV synchrocyclotron. For this purpose the C.E.R.N. Health Physics Group has designed a special survey trolley for indoor and outdoor surveys.

On the top of the trolley are mounted two Vibron dose ratemeters, manufactured by **Electronic Instruments Ltd.**, Lower Mortlake Road, Richmond, one with a tissue equivalent ionisation chamber, and one with an argon, or carbon dioxide chamber. From the two values of ionisation current the dose rates of gamma rays and heavy particles can be calculated separately. Pen recorders are usually used with the electrometers. The instruments on the lower shelves are portable meters for slow neutrons, fast neutrons and gamma rays respectively.

The trolley is equipped with a battery and motor generator which enables it to



E.I.L. instruments on mobile radiation monitor

be used in areas remote from mains power supplies. It is intended to use the E.I.L. Vibron dose ratemeters to calibrate area monitors installed around the 200 metre diameter accelerating chamber of the C.E.R.N. proton synchrotron, which is scheduled to operate at 25 GeV (25,000 MeV) early in 1960.

BLENDER WITH LEAK-PROOF SEAL COVER

THE 800 c.c. Ato-Mix electric laboratory blender being manufactured by **Measuring and Scientific Equipment Ltd.**, Spencer Street, London S.W.1, is now equipped with a sealing cover assembly incorporating a lid moulded in 'Rigidex polyethylene' supplied by British Resin Products Ltd.

The blender is employed for the preparation of suspensions and emulsions and the use of the sealing cover enables toxic, corrosive or bacteriologically dangerous fluids to be handled safely without the risk of leaking. At the same time the use of the resilient Rigidex lid assembly enables a tight seal to be made even when the blender is fitted with a glass container. The cover is said to be completely resistant to corrosion and staining.

The Ato-Mix is available for 200/250 a.c./d.c. or 110/120 a.c./d.c. supply. It has two speeds: 6,000 r.p.m. and 12,000 r.p.m. An 800 c.c. model is supplied for general laboratory use and a 100 c.c. model (utilising the same motor assembly) for smaller volumes and semi-micro work.

Ato-Mix laboratory blender

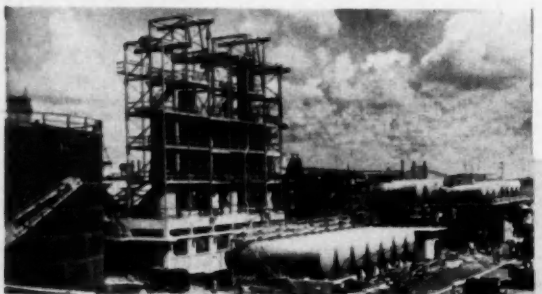
NEW FIRST AID REGULATIONS

A LEAFLET dealing with the new first aid regulations which come into effect on 1 January 1960 is available from **Cuxson, Gerrard and Co. Ltd.**, Fountain Lane, Oldbury. The new regulations, governed by S.I., 1959/906 ('First Aid Boxes in Factories Order') replaces the 1938 Order.

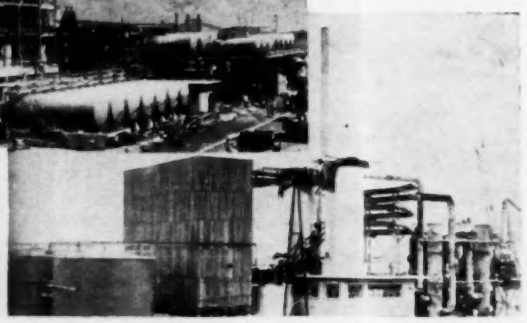
The new order specifies a revised list of minimum requirements including some additional items, slight alterations in the types of certain of the contents of first aid boxes previously quoted, plus a new treatment leaflet. The company is now supplying new Sanoid first aid outfits that conform to these requirements.

Copies of the firm's leaflet as well as further information about any of the products reviewed here—can be obtained by completing and returning the CHEMICAL AGE reader enquiry service form on p. 553, or by writing direct to the companies concerned, and quoting CHEMICAL AGE.

Sulphuric Acid and Tar Distillation Plants under Construction at Durgapur



Left, tar distillation plant by Chemical Engineering Wiltons Ltd. under construction at the Durgapur steelworks, India



Right, Simon-Carves 60 tons/day sulphur burning H_2SO_4 plant under construction at Durgapur. The steelworks is being built by the U.K. consortium, ISCON

New Wimpey Contracts from Union Carbide and C.S.R.C.-Dow

A CONTRACT worth about £1¼ million has been awarded to George Wimpey by Union Carbide Co. Details of the project have not been disclosed but it is understood that it involves extensions to Union Carbide's polythene plant at Grangemouth.

The company have also won a contract in association with Bechtel of San Francisco, and McDonald Constructions, of Australia, to build a £A3 million styrene plant at the Melbourne suburb of Altona for C.S.R.C.-Dow Proprietary. The plant which is part of the big Altona petrochemical project, should be completed by May 1961.

New Plant Projects and Simon-Carves Group

IN ADDITION to the chemical plant projects included in our table of 26 September with Simon-Carves Ltd. as main contractors, we now learn that the following projects, also listed had Simon-Carves Ltd. as contractors: the continuous reforming plant of the Guernsey Gas Light Co. Ltd. which will produce 2.6 million cu. ft. of town's gas per day from commercial butane; and the biological unit for the treatment of coke-oven effluent liquor at the Ebbw Vale plant of Richard Thomas and Baldwins.

The following projects have Simon-Carves Ltd. as contractors, and not as was stated, their subsidiary company, Chemical Engineering Wiltons Ltd.: Modifications to the Billingham gas-cleaning plant of British Titan Products Ltd.; the 50 tons per day sulphuric acid plant of W. H. Cowburn and Cowpar Ltd. at Manchester; the Northern Gas Board's concentrated ammonia liquor plant and wet purification plant at Hendon; and three gas dehydration plants for the Southern Gas Board at Southampton, Reading and Hilsea.

Safety in Mines' New Laboratory Block

A contract worth £350,000 has been obtained by Sir Lindsay Parkinson and Co., from the Ministry of Works for demolition of an existing building and erection of a reinforced concrete six-story laboratory block and workshops at the Safety in Mines Research Establishment, Broad Lane, Sheffield. Work is to start on 26 October.

Obituary

Sir Henry Tizard, G.C.B., A.F.C., F.R.C., Rector of the Imperial College of Science from 1929 to 1942, died on 9 October, aged 74. Secretary of the Department of Scientific and Industrial Research from 1927 to 1929, he left to become Rector of the Imperial College until his resignation in 1942. He became chairman of the new Defence Research Policy Committee in 1946 and of the Scientific Advisory Policy Committee, positions that he relinquished in 1952. He was president of the British Association in 1948.

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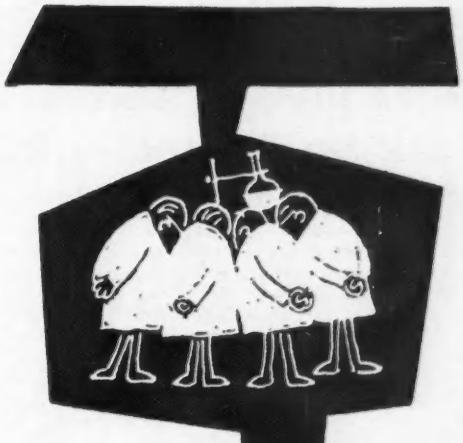

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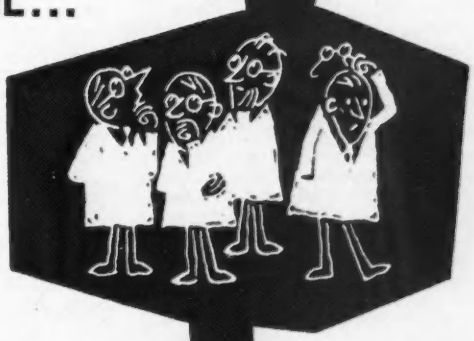

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Letters to the Editor

Lessons from the Election: Antibiotics and Pesticides: Rebuttal on Market Research

SIR,—The Election being over, it may not be out of place to consider what lessons the business man may draw from the campaigns and their result. For example, does television advertising pay? The answer, as those who have used it with discretion well know, is 'Yes.' The answer when catchpenny, not to say downright dishonest, claims are made, is 'No.' The great British public, or to be more precise, that young section of one million or so of it who were voting for the first time, evidently recognise shoddy goods when they see them.

Clearly nationalisation is finished. Introduced by a Labour Government that did not have a mandate (what business would contemplate altering its articles without the consent of two-thirds of the shareholders? Even in 1945 the Socialists had less than half the total votes cast) nationalisation has been rejected by the electorate three times since. Mr. MacMillan's Government, with a clear four years and more ahead in office, will certainly take steps to reduce the present area of nationalisation. There should be little difficulty in hiving off hotels and catering from British Railways, for example; nor would the sale back to the investing public of the gas and electricity industries be as formidable a task as it may seem at first mention.

Sense of Fair Play

Another lesson to be learnt from the Election is that the electorate with its innate sense of fair play has ruled that an industry threatened by political interference is fully entitled to stand up and defend itself.

After all, for the Socialists to say, as they did: "We are going to nationalise you. Any money you spend in telling the public that there is a case against nationalisation is a criminal misuse of money that ought to be going to the State in tax" was a monstrous and unfair assertion. Rightly, it has been rejected.

Unrealistic too, was the official Socialist line: "No more business expenses: tax capital gains: planned industrial expansion." Every business man knows that money has to be spent before it is earned; that no industrial expansion is worthwhile if the resulting increase in capital value is taken away; and that 'planning' has put British Railways and coal into bankruptcy.

Perhaps we shall hear less in future of this kind of nonsense from the long haired boys, most of whom have never sold anyone anything. Business men, none the less, will do well to show moderation in victory. Everyone knows or hears of the occasional spiv, the cheat who fiddles his expense account. He is the man who should be exposed, and so clear the good name of British industry and protect it from accusations, which as regards 99 business men out of 100 are entirely baseless.

E.G.B.

Growing Resistance of Pests to Insecticides

SIR,—Your implication that my report of the Institute of Biology's conference represented "half-truths or complaints which are given undue importance by being quoted out of context" (CHEMICAL AGE, 10 October, p. 477) suggests that you had no representative attending the meeting in question.

If you had, you would have realised that the concern of biologists about the growing resistance of many pests to many insecticides is matched only by the current concern of doctors about the formidable problem of antibiotic-resistant staphylococcus in hospitals.

The problems are very similar, and have arisen largely because of lack of biological foresight. By using antibiotics and pesticides as blunt instruments, several problems were solved quickly and dramatically—but new and potentially more difficult ones are emerging.

The fact is that biologists know more about insects than chemists—and, as you admit yourself, much more co-operation is needed.

The question of the adequacy of the present voluntary scheme of insecticide notification and the present codes of spraying practice was not raised by me but by Dr. J. T. Martin of Long Ashton. My understanding of his paper was that public analytical laboratories to check residues in foodstuffs would be desirable —but that there are many practical problems such as expense and dearth of fully developed analytical techniques.

But whatever Dr. Martin thinks, I believe it is an obvious necessity that there should be some regular check on the use and effects of organo-phosphorous and chlorinated hydrocarbon compounds.

Yours etc.,

JOHN DAVY,
Science Correspondent.

The Observer,
London E.14.

Market Researchers Exchange Information

SIR,—I presume I may have the opportunity of a rebuttal in connection with some of Mr. Hodge's remarks in regard to market research in Europe. (CHEMICAL AGE, 10 October, p. 481).

May I say that I agree with many of Mr. Hodge's comments. But may I remind him and your readers that I was not offering my own opinions—I was reporting what was said at the O.E.E.C.-E.P.A. meeting in Paris. I do not agree with all that was said there, but I believe my reporting of it was honest.

Those of us in the consulting chemical market research field *do* have information to exchange and we *do* exchange it. We use tact and ethics, of course.

The whole point on statistics was that figures for any given country may reveal figures for a specific company; but when all European Common Market countries, and all outer seven countries are taken as groups this should not happen—or at least more statistics might be available than currently. This was one of the major points of the meeting. In the United States there must be more than three producers and no company can produce more than 50% of a product before the figures can be revealed. If you apply that same criteria to a single European country, few figures will be available. But if you apply it to E.C.M. or the 'outer seven' (or both) as a whole, you have a different situation.

The trend approach on forecasting was reiterated time and time again by people at the meeting. I, personally, do not believe in it. My firm, in any event, does not use it either in the United States, in Europe, in Latin America or anywhere else we do work. The exceptions, of course, are such things as populations. For instance, try a trend line approach on arsenicals—the organic insecticides make a slight change.

Yours, etc.,

ROGER WILLIAMS, JR.
Roger Williams Technical & Economic Services, Inc.
Princeton, New Jersey, U.S.

Petrochemicals Say SO_2 Emission will be Lower

FIFTEEN local authorities at a joint meeting early this week heard a statement from Petrochemicals Ltd., Carrington, that sulphur dioxide emitted by their boiler plant stack would be substantially less than was originally thought. They expressed their desire to co-operate with the local authorities, who decided to ask the company to inform the councils at regular intervals of the daily discharge of SO_2.

The meeting decided to recommend the authorities to tell the Minister of Housing of their disappointment that he did not, when granting permission for an extension to the boiler plant, impose a limit on the sulphur content of the fuel oil to be used. The Minister is to be asked to initiate discussions between himself, the company and the local authorities on this aspect of company policy.

Last year the authorities concerned opposed a proposal by Petrochemicals Ltd. to extend their boiler plant. The Minister gave his consent subject to the fuel gases being discharged from a 375 ft. chimney—75 ft. higher than that proposed by the company.

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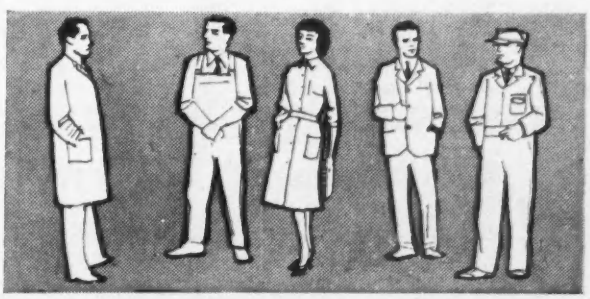

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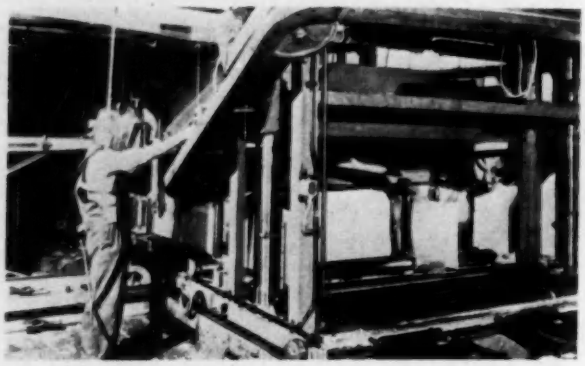


Foam-making plant of Aeropreen products, which has been in full production since Christmas 1958. A 1-metre wide run of foam is being cut into blocks

POLYETHER, plastics foam derived from petroleum, is being produced by Aeropreen Products Ltd., High Wycombe, on the biggest foaming plant in Europe, which can turn out four tons of foam an hour. Present production is about 1,500 tons a year.

Demand has proved so great that the company has decided to concentrate solely on polyether to the exclusion of earlier coal-based foams such as the vinyls and polyester urethanes.

The polyethers are based on either polypropylene glycol systems or mixed polypropylene-polyethylene glycols, or derivatives of these. Up to now the prepolymer system has been used, but the company are beginning one-shot production, which after much experiment and trial is now commercially practicable. The catalyst system has been evolved in the company's own laboratory.

Production begins in the resin shop, where there are three one-ton kettles in which the polyether resin is produced under a carbon dioxide 'blanket'. It is then pumped to storage tanks where it is kept until required during a production run.

The activator complex is prepared under carefully controlled conditions and the reactants are carried by flexible pipes to the foaming head of the main plant. The foaming head has been constructed to create turbulence at the point of mixing, but at the same time to ensure that the flow of the final compound is fast, smooth and free from air.

A continuous belt of steel slats carries a trough of paper continuously away from the mixing head, which rapidly and constantly traverses the trough. As it is carried away in the paper trough the foam rises under a fume extractor. Finally it reaches a rubber belt where the foam is stripped of the paper and is cut into suitable blocks for the curing ovens, where it stays for periods of two to eight hours at 120°C according to the type of foam. Slabs up to two metres wide can be made.

Finally the blocks are passed through crushing rollers which rupture the cell walls and give the foam its characteristic flexibility.

Softness and excellent recovery are the big advantages of polyether over alternatives, the managing director of Aeropreen, Mr. R. Davis Millar, states.

A recent development by Aeropreen is the refoaming of scrap to make bonded foam.

Applications of Courlose Solution

SODIUM carboxymethyl cellulose (S.C.M.C.) is marketed by British Celanese Ltd. under the trade name Courlose. This water-soluble cellulose derivative has properties which make it particularly useful for thickening, preventing coagulation, stabilising dispersions, sizing and coating.

Courlose is now widely used in the paper, carton board and printing industries and British Celanese have produced a technical booklet giving recommendations for usage. A useful description of the various grades (Courlose N.600, N.602, F.300, F.650 and F.750) is included. Under recommendations for storage of Courlose solutions, it is noted that these may be stored at room temperature under normal mill conditions for periods of time varying between one and four weeks dependent upon the season of the year. When solutions are to be stored for more than a few days, it is recommended that a preservative should be added. A number of preservatives are available and can be used in the following proportions and/or according to the manufacturers own recommendations:

Preservative	*Manufacturer*	*Recommended concentration (% on Total Solution)*
Sodium pentachlorphenate	Monsanto Chemicals Ltd.	0.05—0.10%
p-Chlor-*m*-cresol	Monsanto Chemicals Ltd.	0.05—0.10%
Phenyl mercurial (Nuodex. 321)	Durham Raw Materials Ltd.	0.001—0.003%
Phenyl mercurial RD 113	Ward, Blenkinsop & Co. Ltd.	0.001—0.003%
Formaldehyde	—	0.1%
Phenol	—	0.1%

C.J.B.'s Work on Chemical Projects

NEW contracts placed with Constructors John Brown Ltd. include the installation of boiler plant control equipment at Loughborough, Newmarket and Staythorpe. This is stated in the autumn edition of *Panorama*, the C.J.B. house journal.

Also listed are the places where C.J.B. staff are currently 'on site'. Included are the design, procurement and construction of a chemical plant at Wilton; engineering, procurement and construction of a chemical plant at King's Lynn; and the engineering and construction of acid and grease plants at Spondon and Purfleet respectively. Work is in hand on the installation of control panels for equipment for plastics plants at Billingham and Hillhouse, for chemical plants at Ruabon and Trafford Park, for plastics pilot plants at Welwyn, for a sugar factory at Silvertown and for a paint factory at Stowmarket.

Other work in hand on site includes an oil pipeline at Bromborough, firefighting facilities and control equipment for a petrochemical plant at Carrington; 54 in. ducting to reactors at Chapel Cross; oil pipelines, pumphouses and process plants at Shellhaven; re-vamp of a lubricating oil unit at Stanlow; test loop instrumentation at Windscale; and a pipeline and electrical installation at Winfrith Heath.

News Sheet for Users of Midland Silicone

SOME 35,000 copies of a new newsletter are being posted this week by Midland Silicones Ltd. to actual and potential customers of the company. Initially appearing bi-monthly, the *Midland Silicone News* will feature information about the ways in which silicones are used today in almost every industry.

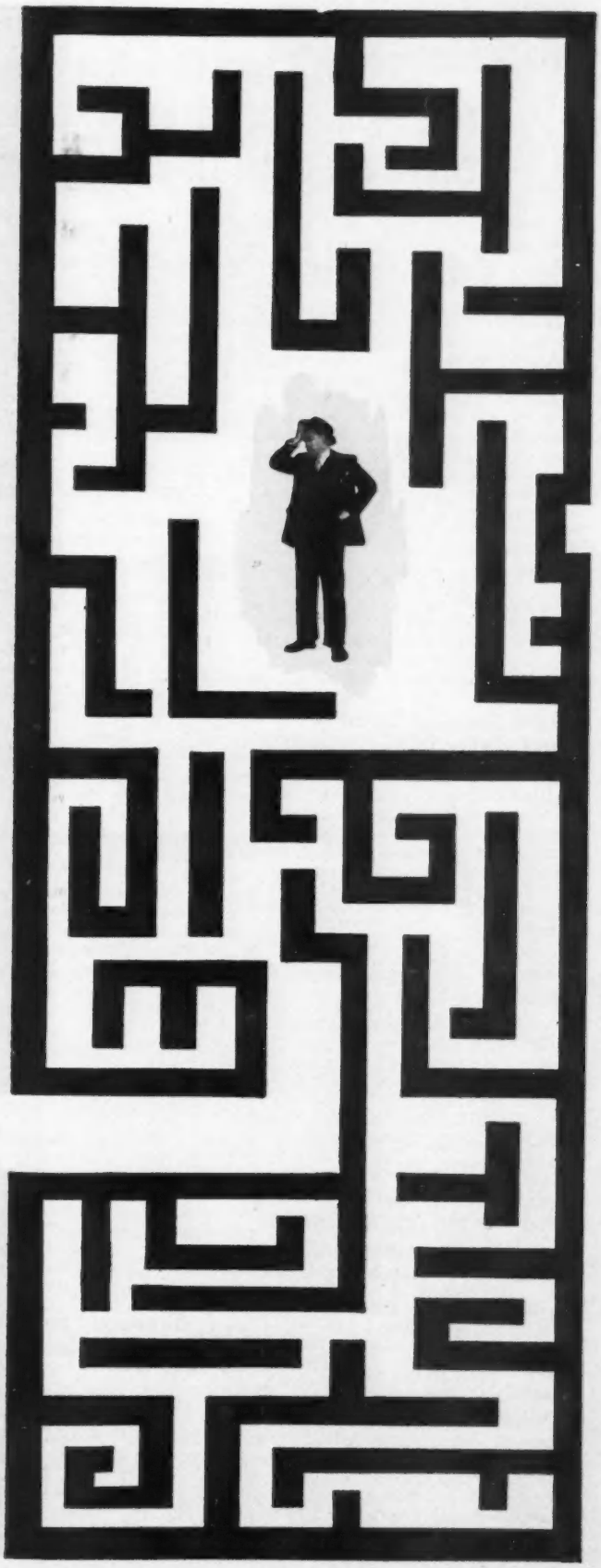
Midland Silicones Ltd. feel that the new publication will capture the interest of people who do not realise the full extent of the uses of silicones in this country. They have found that all too often people using silicones for specific applications in their own profession have very little knowledge of the ways in which these new chemical compounds are used in other industries—yet this could often be helpful in their own particular fields of interest. Anyone wishing to receive copies should write to the head office of Midland Silicones, Ltd., 68 Knightsbridge, London S.W.1.

Late News

Britain's Minister of Science

In the reconstruction of his Cabinet Mr. Macmillan has appointed Lord Hailsham as Minister of Science. The new Minister will be responsible for B.S.I.R., the M.R.C., the A.R.C., the Nature Conservancy, the atomic energy programme and Britain's part in space research.

INSOLUBLE?



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Overseas News

STILL MORE U.S. POLYPROPYLENE: TEXAS EASTMAN IN PRODUCTION

COMMERCIAL production of polypropylene on a "limited basis" is announced by Texas Eastman, U.S. The company has issued price lists for the material and is marketing it on a commercial scale. Capacity of its operation at Longview, Texas, however, has not been revealed to date.

Texas Eastman have had pilot plant production of polypropylene for over a year; the polymer is being made in grades for extrusion and moulding in natural and coloured formulations. The company state that they can expand their production easily to levels significant to the company if not to the industry as a whole. (The two present U.S. producers, Hercules Powder and Avisum, each have 20 million lb. a year capacity at present.)

Of the several companies in the U.S. reported to be carrying out pilot-scale work on polypropylene, Grace Chemical are still evaluating the situation and indicate that they do not expect to go into commercial production at present.

Soviet Chemical Industry Faces Higher Costs

It has been estimated that the transition to a shorter working day in the U.S.S.R.—seven hours, and in some cases six—and an adjustment of wages, has resulted in a 25% rise in average monthly wages in coal-mining, a 13% increase in the chemical and non-ferrous metal industries, and a 15% rise in the steel industry.

New Finnish Plant for Titanium Dioxide

Vuorikemia Oy, having bought a site at Mäntyluoto, near Pori, Finland, have started the construction of a titanium dioxide factory. The plant should be ready towards the end of 1961. Annual capacity will be 16,000 tons of titanium dioxide, and a part of the production will be earmarked for export.

Anic Raise Rubber and Fertiliser Outputs at Ravenna

The plants operated by Anic at Ravenna, Italy, have been extended to give a production of 1 million tons of chemical fertilisers and 70,000 tons of synthetic rubber a year.

Esso Research Fuel Cell

Work being carried out by Esso Research and Engineering Co., of New Jersey, U.S. to modify the revolutionary concept of the fuel cell so that it will work with petroleum-type compounds were described recently by Dr. W. J. Sweeny, vice-president of the company. Referring to the Bacon fuel, Dr. Sweeny said that although this cell was reasonably efficient, hydrogen gas as a fuel was inconvenient and expensive in comparison with oil, gas or coal. Esso Research have built a cell, however, which successfully oxidises ethane gas to produce enough current to light a small flashlight bulb. Eventually it was hoped the cell could be made to work on liquid fuels such as heating oil.

Drought Halts Norsk Hydro's Ammonia Production

Owing to shortage of water and hydro-electric power in the Telemark Area, due to the prolonged drought, production of ammonia at Norsk Hydro's plant at Notodden, has been temporarily suspended.

Output of ammonia at Norsk Hydro's Glomfjord Salpeterfabrikken plant, Glomfjord, has also been affected this year by repair work being carried out at the State hydro-electric power plant at Glomfjord. This work is expected to be completed this month when production of ammonia at the Glomfjord plant is expected to be raised to above previous records.

Italy Produces More Ammonia and Sulphuric Acid

Below are given the outputs of some chemicals in Italy during the first half of the current year, compared with the figures for January to June 1958: Synthetic ammonia, 290,000 tons (259,000 tons); sulphuric acid, 1,633,000 tons, (1,554,000 tons); caustic soda, 164,000 tons (130,000 tons); tanning extracts, 58,000 tons (59,000 tons).

Reeves Brothers Making Polypropylene Textiles

Entry into polypropylene textiles is reported by Reeves Brothers, U.S. Base resin is being bought from Hercules Powder and the company is extruding its own material (both monofilament and staple), spinning fibres and weaving industrial textiles. Already established in industrial uses, Reeves are pricing their textile product at $1.06 to $1.28 a lb.

'Sironized' Mark for Non-Iron Woollens

The name Sironized will be used to identify correctly treated washable non-iron woollen fabrics made by the Commonwealth Scientific and Industrial Research Organisation's new process.

Manufacturers whose treated fabric conforms with the standard laid down will be allowed to use the mark Sironized. Conditions of use can be obtained from the C.S.I.R.O. Division of Textile Industry, P.O. Box 21, Belmont, Geelong, Victoria, Australia.

Texas Butadiene Invest $39 m. in Argentina Plant

Texas Butadiene and Chemical International Ltd., a subsidiary of Texas Butadiene and Chemical Corporation, New York, have had approval for their investment of $39 million in a company to be formed for the installation of a petrochemical plant in Puerto Deseado, Santa Cruz, Argentina. The plant is expected on stream in 24 months with an initial output of 30,000 tons of butadiene, 40,000 tons of synthetic rubber and 15,000 tons of smoke black, later increasing to 42,000, 60,000 and 25,000 tons respectively.

Montecatini's Polypropylene Plant in Operation Shortly

Next month, Montecatini's 10 million-lb.-a-year polypropylene fibre plant at Terin starts commercial production. The fibre will be sold in Europe at about 60 cents a lb. In 1960, Montecatini plan to triple capacity at Terin and to market their product in the U.S. as well at a price competitive with U.S. material. By 1961, the Novamont affiliate of Montecatini expects to have a 10 million lb. polypropylene plant on stream at Neal, W. Va. At their Ferrara, Italy, plant, the company is expanding its production to 45 million lb. a year.

Styrene Plant for Trinidad

"Pioneer status" involving substantial tax concessions has been granted by the Government of Trinidad to W. R. Grace and Co. for the manufacture of styrene monomer.

Federation Chemicals, Grace's affiliated company are about to begin production at their $20 million (W.I.) fertiliser plant in Trinidad ($4.80 (W.I.) = £1). The new plant is expected to involve an investment of $7.5 million (W.I.).

Du Pont Form French Weedkiller Company

A new French company, Du Pont de Nemours (France) S.A., has been formed to contract for the manufacture of weedkillers in the expanding French market, states Mr. David H. Conklin, European director for E.I. du Pont de Nemours and Co. The new company, a wholly owned subsidiary of the U.S. parent will sell Telvar monuron and Karmex diuron weedkillers for use in industrial and agricultural weed control.

Firestone Plan Synthetic Polymer Plant in France

Chairman of Firestone Tire and Rubber Co., U.S., Mr. Harvey S. Firestone, Jr., has announced that the company plans to build a multi-million dollar plant in France. On the same site is a plant for the manufacture of special synthetic latices and copolymers of butadiene and styrene.

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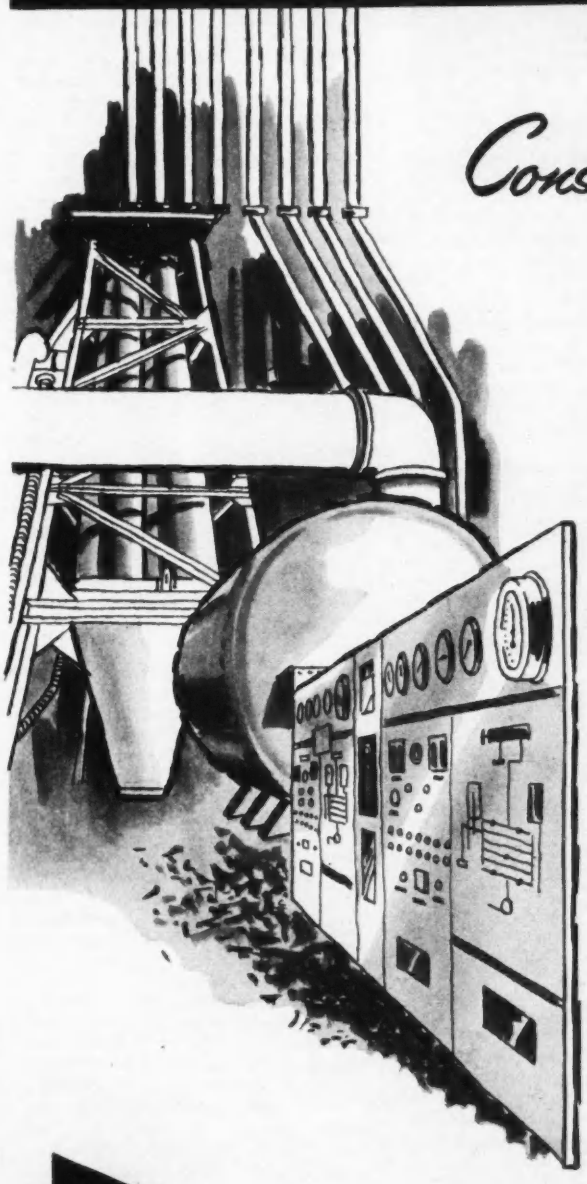

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PEOPLE in the news

● **Dr. K. J. Lynes, B.Sc., Ph.D.,** works and production director of Pfizer Ltd., has been appointed a director of Kemball, Bishop and Co. Ltd., a subsidiary of Pfizer Ltd. Before joining the Pfizer Group in 1954 as fermentation supervisor, he had been with the Distillers Co. and Glaxo Laboratories. Dr. Lynes was appointed a director of Pfizer in October 1958. The appointment is said to give further evidence of Pfizer's diversifying policy and their decreasing dependence on ethical pharmaceuticals.

● **Mr. R. J. Baines,** sales manager of Henry Balfour and Co. Ltd., Leven, Fife, has just left England for a short visit to Nigeria. He hopes to meet ministers of the three Nigerian governments and discuss the wide range of development in that country's industrial expansion. **Mr. John Reed,** a chemical engineering executive of George Scott and Son (London) Ltd., left England on 28 September for Australia, via America. He spent a week with the Rietz Manufacturing Co., Santa Rosa, California, and then flew to Australia. In Sydney, he will meet **Mr. H. D. Macmurray,** a senior director of George Scott and Son —already on a world sales tour—to assist in the development of George Scott and Son (Australia) Pty. Ltd.

● **Sir Solly Zuckerman,** 55, has been appointed Scientific Adviser to the Minister of Defence and chairman of the Defence Research Policy Committee as from 1 January next. He succeeds

Sir S. Zuckerman **E. E. Bullen**

Sir Frederick Brundrett, 65, who has held these posts since 1954, and who retires from public service on 31 December.

Sir Solly, who is deputy chairman of the Advisory Council on Scientific Policy, is also chairman of the Natural Resources (Technical) Committee. He is also Sands Cox Professor of Anatomy in the University of Birmingham, and a member of the Agricultural Research Council and the B.B.C. General Advisory Council.

● **Mr. E. E. Bullen, M.B.E.,** has been elected to the board of Shell Chemical Co. Ltd. as finance director. Mr. Bullen, who had been appointed finance manager in April 1959, joined the Royal Dutch/Shell Group in 1930. He served in Morocco as chief accountant from 1931 to 1941 and the following year was awarded the M.B.E. for his services with the underground movement in Morocco. He was chief accountant for the Shell Co. in West Africa from 1942 to 1946 and then returned to Shell Petroleum in London.

● On board the Cunard liner *Queen Mary* which sailed from Southampton for New York on 8 October was **Mr. G. C. H. Matthey,** chairman of the Thermal Syndicate Ltd., chemical plant manufacturers, Wallsend.

● **Dr. R. S. Edwards,** chairman of the North Eastern Gas Board, has been elected chairman of the council of the Coal Tar Research Association with effect from next April.

● **Mr. Hugh Wilson** has been appointed export manager of the International Synthetic Rubber Co. Ltd.

● **Dr. F. E. King** has resigned from the board of British Celanese Ltd.

● **Mr. E. P. Banderet, Mr. J. Barker** and **Mr. J. P. Perkins** were appointed to the board of the Clayton Aniline Co. Ltd., Clayton, Manchester 11, and elected joint managing directors on 9 October. **Mr. Arthur Sharp,** a director and company secretary for many years, has vacated his seat on the board.

● **Mr. Russell C. Nelson** has been appointed marketing manager of the General Products Group of Du Pont de Nemours International S.A., 81 Route de l'Aire, Geneva, to plan and implement European sales programmes for a number of Du Pont products. With 16 years' experience in chemical research and export sales for Du Pont, Mr. Nelson has since 1956 been assistant manager of the London office of E.I. du Pont de Nemours and Co. Inc. The transfer and appointment of representatives for four departments assigned to Mr. Nelson's marketing organisation have been announced. **Mr. A. T. Hawkinson,** until recently assistant director of a Du Pont sales service laboratory near Wilmington, U.S., will head sales activities for various industrial chemicals (sodium cyanides, peroxides, chlorinated solvents, formaldehyde, polyvinyl alcohol and acetate, furfural derivatives, etc.); **Mr. C. L. W. Stein,** former export sales representative in Belgium and Switzerland, will handle resin-coated fabrics and paints; **Dr. L. E. Cowart,** service representative in Basle, will handle industrial and agricultural chemicals (urea, methanol, acids, adhesives, anti-freeze, weedkillers, insecticides, fungicides, garden chemicals, urea feed and fertilisers, etc.); **Mr. P. Botsolas,** export technical representative, will handle photographic films, papers and screens.

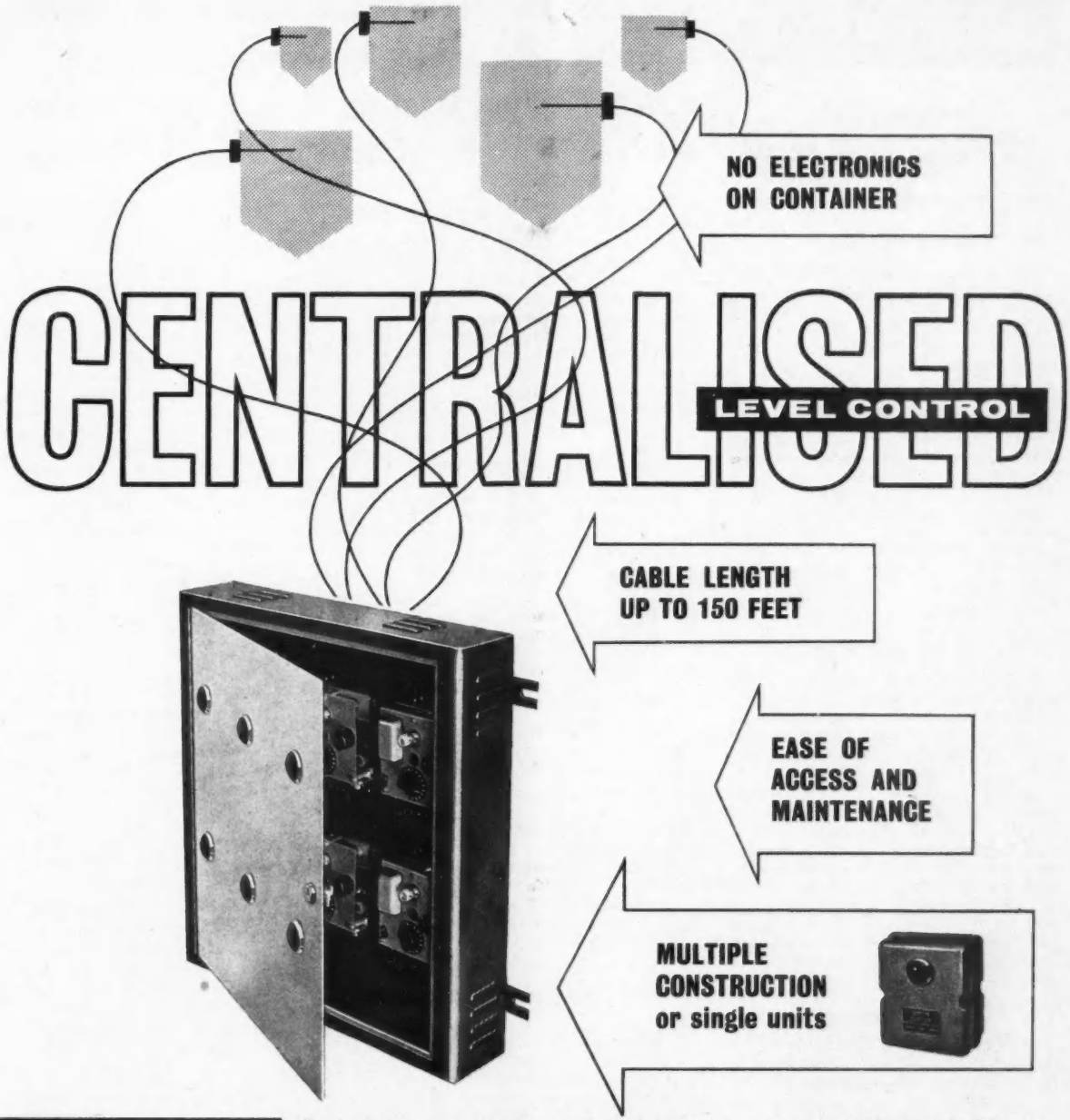
● **Mr. Humphrey Gooch Rope,** agricultural sales director of Fisons Ltd., Harvest House, Felixstowe, was elected president of the Fertiliser Manufacturers' Association at the recent annual meeting. Mr. Rope, who has served with Fisons for the past 23 years, succeeds **Mr. J. T. Procter,** and took office on 1 October. He has been a member of the F.M.A. council since 1954, and is on the committee of the Superphosphate Manufacturers' Association, of which he was chairman in 1957-58. **Mr. R. B. Risk,** managing director of the Farmers' Co. Ltd., Yarborough Oil Mills, Brigg, Lincs, was elected vice-president.

G. F. Williams **H. G. Rope**

● **Mr. G. F. Williams, M.A.,** managing director of British Drug Houses Ltd. since 1947, was last week elected president of the Association of British Chemical Manufacturers. He was A.B.C.M. chairman from 1955 to 1957. An Adelaide Stoll bachelor research scholar at Christ's College, Cambridge, from 1927 to 1928, he was Professor of English Literature at Baroda College, Bombay University, from 1928 to 1931. He joined the National Institute of Industrial Psychology in 1932 as an industrial investigator, doing market research and sales organisation assignments. He joined B.D.H. in 1935 and during the war was a member of the Vitamin A manufacturers' panel. Mr. Williams is chairman of the B.D.H. subsidiaries in Canada, Australia, India, New Zealand and South Africa.

● **Mr. Edward A. Smith** has been appointed to the board of Acheson Colloids Ltd., it is announced by Acheson Industries (Europe) Ltd. Acheson Colloids are their principal subsidiary, who shortly celebrate 50 years of manufacturing activity.

● **Sir Noel Hall** has joined the board of Fisons. He will continue as principal of the Administrative Staff College at Henley-on-Thames, an appointment he has held since 1946. The governors of the college have agreed that Sir Noel should accept the appointment.



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Commercial News

- **Dunlop Rubber's Group Sales £7 m. Higher**
- **Interim of Laporte Industries Raised ½%**
- **Henry Briggs Offer for Brit. Benzol Balance**
- **One-for-two Scrip Issue by Head Wrightson**

Beecham Group

The Beecham Group is raising its first interim dividend from 7% to 8% in respect of the year to 31 March 1960. A total of 24% was paid for 1958-59.

Berry Wiggins

The directors of Berry Wiggins and Co. announce that of the offer to shareholders of 397,500 5s ordinary shares at 12s 6d each, acceptances totalled 97%. Applications were received for more than 320,000 additional shares.

British Benzol

Henry Briggs and Son and Co. (Trust) have made an offer through Ridge Securities to acquire the balance of the capital of British Benzol and Coal Distillation Ltd., not already held. The offer is 48s 6d per £1 unit and is unconditional. It will remain open until 21 October. Already 45% of the British Benzol capital is consolidated by Henry Briggs.

Beralt Tin and Wolfram

A group net loss of £95,706 (net profit £104,337 plus £215,349 tax written back) is reported by Beralt Tin and Wolfram for the year to 31 March 1959. Dividend is 20% (50%, plus special dividend, 40%).

The directors report a lower average price for wolfram during the 12 months; and there were no longer sales under a high fixed prices contract, as in the previous year to improve the overall results. Also the market was not strong enough to absorb additional quantities of wolfram. Production of this metal has therefore been restricted. Tin production has increased, however, from 396 tons to 642 tons.

Greeff-Chemicals

Interim dividend of Greeff-Chemicals Holdings is 5% (same). Total dividend for the previous financial year was 25%.

Head Wrightson

A one-for-two scrip issue is announced by Head Wrightson and Co. The directors also forecast a total dividend for the year to 31 January 1960, of 14% against an equivalent 13¼%, although they expect lower profits for the period.

Dunlop Rubber Co.

Group sales of Dunlop Rubber Co., in the first half of this year were £7 million higher at £127 million than in the corresponding period of last year and £4 million above those of the second half of 1958.

Interim dividend of 4d per 10s ordinary unit on a capital increased by a one-for-four scrip issue is the same equivalent as paid on account of 1958 when total dividends were equal to 13% on the present capital.

The half-year's group net profit of £3.15 million compares with £2.64 million in the first six months of 1958.

Level of demand in most areas where the group operates continues to be generally favourable, the company reports, but the full effect is now being experienced of the higher price of natural rubber which is being only partly offset by an increased proportion of synthetic rubber.

Laporte Industries Ltd.

Interim dividend of Laporte Industries Ltd. is being raised from 2½% to 3% for the year to 31 March 1960—the previous year's final was 5½%. The ordinary capital was increased to £8,757,000 last June by acquisition issues of £642,857.

Mr. P. D. O'Brien, chairman, reports that the improvement in trading referred to at the last annual meeting has continued over the whole of the first half of the current year.

Lawes Chemical

Resolutions to create capital and to effect the scrip issue were passed at Tuesday's meeting of Lawes Chemical Co. Mr. F. A. Perkins, the chairman, said the old certificates would be called in and new ones issued for the total holdings. Share numbers would be discontinued.

On business conditions Mr. Perkins said that at the end of the first quarter indications were that the sales drive to push their improved fertiliser product was giving very satisfactory results.

Anic

Anic, a member of the Italian E.N.I. Group which operates petrochemical plants at Ravenna, and refineries at Leghorn and Bari, are to increase their capital from Lire 7,200 million (£4.13 million) to Lire 18,000 million (£10.32 million). An even larger increase will be effected later in connection with the large-scale project planned at Gela, Sicily. This scheme involving an investment of about Lire 105,000 million (£60.2 million) will be carried out by a new company in which Anic will hold a 50% interest.

A large refinery, an electric power station and petrochemical plants are to be built at this Sicilian town under the scheme. The refinery will process some 3 million tons a year of crude oil from a local oilfield, obtaining coke (about 23%), a mixture of liquid hydrocarbons and a gaseous fraction. The petroleum coke will be burned in the furnaces of the new power station; the liquid residue will be refined in the usual way; the gaseous fraction will be utilised for the production of chemicals.

Montecatini

Official dealings in Montecatini shares began on five German Bourses on Monday. Transactions were to be in bearer certificates rather than shares, because of Italian company law.

Market Reports

REASONABLE LEVEL OF EXPORT BUSINESS

LONDON Steady trading conditions have been shown in all sections of the industrial chemicals market during the past week, with good quantities being called for against contracts. Enquiry on home account has included a fair amount of forward delivery business, and the supply position is adequate.

There has been little change in prices and the undertone is firm, but overseas buyers are seeking competitive quotations. Price for copper sulphate from 12 October is £76 per ton, less 2%, f.o.b. Liverpool.

The fertiliser market is fairly active and there has been some expansion in demand. The coal-tar products are in good request.

MANCHESTER The Manchester market for most descriptions of chemicals has continued on a steady price basis and so far as home-trade is concerned, movement against contracts is satisfactory, with replacement business coming forward as the need arises. Shipping enquiry has been on a fair scale. In fertilisers, demand for compounds, basic slag, and top-dressing descriptions is steadily expanding, and there is a fair movement of most of the tar products.

SCOTLAND Little change has taken place in the Scottish heavy chemical market. The general trend of business during the earlier part of the week was rather quieter, but progressed more favourably towards the end. Enquiries received were more numerous and varied, and the usual range of basic heavy chemicals was again fairly well demanded. A reasonable level of business is being maintained in the export market, although there is room for improvement.

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CVS-II

NEW PATENTS

By permission of the Controller, HM Stationery Office, the following extracts are reproduced from the 'Official Journal (Patents)', which is available from the Patent Office (Sales Branch), 25 Southampton Buildings, Chancery Lane, London W.C.2, price 3s 6d including postage; annual subscription £8 2s.

Specifications filed in connection with the acceptances in the following list will be open to public inspection on the dates shown. Opposition to the grant of a patent on any of the applications listed may be lodged by filing patents form 12 at any time within the prescribed period.

ACCEPTANCES

Open to public inspection 2 December

Descaling titanium and titanium alloy surfaces. Pyrene Co. Ltd. **824 767**

Method of preparing carboxylic acid esters of sucrose or raffinose. Sugar Research Foundation Inc. **824 654**

Process for optical brightening of fibres of polyacrylonitrile. Ciba Ltd. **824 659**

Flotation process for dressing ores. Farbwerke Hoechst AG. **824 661**

Manufacture of aromatic diazonium compounds. Tedder, J. M. **824 489**

Producing pure monovinyl-acetylene from gas mixtures. Knapsack-Griesheim AG. **824 567**

Method of lamination of plastic film and foam and the product therefrom. Hudson Foam Plastics Corp. **824 668**

Method of importing anaerobic curing characteristics to polymerisable acrylic acid type esters. American Sealants Co. **824 677**

Polyester resins. Celanese Corp. of America. **824 491**

Antibiotic compositions containing novobiocin. Merck & Co. Inc. **824 785**

Method and apparatus for forming fibres from a heat softenable mineral material. Owens-Corning. Fiberglas Corp. **824 493**

Two-stage hydrocarbon cracking process. Esso Research & Engineering Co. [Addition to 810 808.] **824 495**

Alkaloid derivatives and methods of producing same. Abildgaard, K. [trading as Lovens Kemiske Fabrik Ved. A. Kongsted.] [Cognate application 35 645.] **824 496**

Methods of and means for radioactivations analysis. U.K. Atomic Energy Authority. **824 789**

Dyeing process for protein fibres. Imperial Chemical Industries Ltd. **824 690**

Solvent and compositions made therefrom. Imperial Chemical Industries Ltd. **824 500**

Production of hydrogen cyanide. Horiuti, J., Sato, T., and Ishizuka, K. **824 404**

Metallised monoazo dyes of the benzene-diphenylamine series. Eastman Kodak Co. **824 409**

Thermally insulated bulk storage container. Union Carbide Corp. **824 702**

Process of recovering uranium values. Union Carbide Corp. **824 413**

Separation of isobutylene from mixtures of hydrocarbons. Compagnie Francaise de Raffinage. **824 573**

Polymerisation of olefins and catalysts therefor. Du Pont de Nemours & Co. E. I. **824 418**

Compounds of the cobalamine group and process for the production thereof. Aschaffenburger Zellstoffwerke AG. **824 420**

Production of high molecular weight alkali-soluble polycarbonates. Farbenfabriken Bayer AG. **824 423**

Porphyrin compounds and process for production of same. Daiichi Seivaku Co. Ltd. **824 705**

4-Piperidyl esters. Sandoz Ltd. **824 425**

Purification of electrolytic fluorine. Imperial Chemical Industries Ltd. **824 427**

Production of aluminium alkyls. Imperial Chemical Industries Ltd. **824 428**

Simultaneous reduction of a reducible metal oxide and production of carbon monoxide and hydrogen. Texaco Development Corp. [Addition to 712 929.] **824 805**

Thermally and mechanically stable butyl latices. Esso Research & Engineering Co. **824 431**

Production of fine threads from aliphatic polyolefins of high molecular weight. Vereinigte Glanzstoff-Fabriken AG. **824 432**

Ion retardation method for fractionating brines. Dow Chemical Co. **824 732**

Organo-siloxane water-repellant compositions. Midland Silicones Ltd. **824 436**

Fractionation of fatty acid mixtures. Canada Packers Ltd. **824 574**

Manufacture of pentaerythritol or derivatives thereof. Imperial Chemical Industries Ltd. **824 442**

Water-insoluble azo dyestuffs containing urea or urethane groups. Sandox Ltd. **824 443**

Devices for continuous filtration, drainage, screening, or similar treatment of suspensions. Sunds Verkstader AB. **824 507**

Preparing anionic surface active agents. General Aniline & Film Corp. **824 447**

Orientation of polyester filaments. Du Pont de Nemours & Co., E. I. **824 477**

Method and material for extruding plastic pipe with low coefficient of expansion. Dow Chemical Co. **824 449**

Thermoplastic polyolefinic coatings. Phillips Petroleum Co. **824 710**

Polymerisation of ethylenically unsaturated hydrocarbons. Bataafsche Petroleum Maatschappij NV., DE. **824 451**

Olefin polymerisation catalysts. Esso Research & Engineering Co. **824 454**

Preparation of a moulding material in which a polyamide is mixed with a lubricant. Sonderzoekingstituut Research NV. **824 455**

Polymerisation of butadiene. Chemische Werke Hüls AG. **824 456**

Production of tertiary thiophenylpyridylamines or their acid addition salts. Deutsche Gold- und Silberscheideanstalt vorm. Roessler. [Addition to 806 531.] **824 458**

Pigment for synthetic material and method for making same. National Lead Co. **824 509**

Dyeing of nitrogen-containing fibres. Farbenfabriken Bayer AG. **824 459**

Uranium and zirconium recovery as uranium hexafluoride and zirconium fluoride from alloys containing these elements. U.S. Atomic Energy Commission. **824 579**

Hydrocarbon polymers; processes for and compositions containing the polymers. Bataafsche Petroleum Maatschappij NV., DE. **824 460**

Pyrrolidylmethyl substituted arylindenes and arylindanes and process for preparing same. Mead Johnson & Co. **824 713**

Therapeutic composition. Bristol Laboratories Inc. **824 461**

Hydrothermal synthesis of quartz. Clevite Corp. **824 464**

Solvent extraction of aromatic concentrates. Universal Oil Products Co. **824 582**

Substituted acrylidene-aminobenzoic acids and salts thereof. Lepetit SpA. **824 715**

Phenazine derivatives and their preparation. Geigy AG., J. R. **824 468**

Dioxazine dyestuffs. General Aniline & Film Corp. **824 585**

Separating nickel from solutions containing nickel and cobalt. Sherritt Gordon Mines Ltd. **824 470**

Conversion of hydrogen iodine to iodine. Bataafsche Petroleum Maatschappij NV., DE. **824 471**

Neutral spiral heterocyclic esters of phosphoric acid. Union Carbide Corp. **824 587**

Purification of chlorinated hydrocarbons. Detrex Chemical Industries Inc. **824 588**

Process and apparatus for separating and collecting carbon black. Columbian Carbon Co. **824 749**

Pelleting of carbon black. Columbian Carbon Co. **824 589**

Alkylation of paraffin hydrocarbons. Universal Oil Products Co. **824 750**

Anti-oxidant compositions and their preparation. Griffen Laboratories Inc. **824 513**

Platinum contact catalyst for the oxidation of NH_3 to NO. Stamicarbon NV. **824 479**

Polyethylene compositions and process for manufacture. Union Carbide Corp. **824 480**

Unsaturated esters and manufacture thereof. Hoffmann-La Roche & Co., AG., F. **824 514**

Process for obtaining water or hydrogen with an increased deuterium content. Becker, E. W. A. [Addition to 803 274.] **824 820**

Separation and recovery of vaporous and gaseous oxides from gases. Reinluft GmbH. **824 517**

Process of preparing colourless maleic acid anhydride of high purity. Union Chimique Belge S.A. **824 518**

Production of acrylic acid esters. Badische Anilin- & Soda-Fabrik AG. **824 520**

Hydrocarbon compositions. Shell Research Ltd. **824 521**

Process for preparing a molecular sieve composite. Bataafsche Petroleum Maatschappij NV., DE. **824 925**

Preparation of β-chloro-ethane sulphonates. Du Pont de Nemours & Co., E. I. **824 523**

Process of making an improved carboxylic acid salt complex thickened lubricant. Esso Research & Engineering Co. [Addition to 778 651.] **824 526**

Production of acrylonitrile. Du Pont de Nemours & Co., E. I. **824 593**

Process for preparing sulphurised paraffin wax. California Research Corp. **824 529**

Dyeing polyacrylonitrile fibres, films, and like shaped structures. Badische Anilin- & Soda-Fabrik AG. **824 530**

Ammonium nitrate explosive. Commercial Solvents Corp. **824 533**

Agents for killing weeds and influencing plant growth. Farbenfabriken Bayer AG. **824 534**

Production of 1.3-propylene diamine. Badische Anilin- & Soda-Fabrik AG. **824 535**

Phenthiazine derivatives and processes for their preparation. Soc. des Usines Chimiques Rhone-Poulenc. **824 536**

Method of and apparatus for the separation of gases. Atomenergi AB. **824 594**

Purifying phenol. Progil-Electrochimie. **824 595**

Preparation of nitro compounds. Du Pont de Nemours & Co. E. I. **824 540**

Separation of hydrocarbons using molecular sieves. Esso Research & Engineering Co. **824 596**

Phenthiazine derivatives and processes for their preparation. Soc. des Usines Chimiques Rhone-Poulenc. **824 598**

Refining hydrocarbons by catalytic hydrogenation. Metallgesellschaft AG. [Addition to 824 599.] **824 599**

Insecticidally active acetals containing the methylenedioxybenzene ring system and their production. Badische Anilin- & Soda-Fabrik AG. **824 600**

Preparation of metal salts. Rohm & Haas GmbH. [Addition to 813 202.] **824 601**

Aryl succinonitriles. University of Notre Dame Du Lac. **824 605**

Substituted 4-phenylpiperidine. Lilly & Co., E. **824 607**

Preparation of unsaturated organomagnesium halides. Soc. des Usines Chimiques Rhone-Poulenc. **824 610**

Lubricants containing salts and organic-substituted phosphonic acid. Esso Research & Engineering Co. **824 612**

Manufacture of a liquid silver-containing preparation. Silberman, W. **824 613**

Pyrimidine compounds and salts thereof and a process for manufacture. Hoffmann-La Roche & Co. AG., F. **824 614**

AMENDED SPECIFICATION

On Sale 25 November

Reaction products of polymers with polyisocyanates or polyisothiocyanates. Dunlop Rubber Co. Ltd. **790 543**

"VULCAN" IRON AND STEEL CARBOY HAMPERS
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TRADE NOTES

Colours for Rubber

Collaboration between the rubber service laboratory of the Anchor Chemical Co. Ltd., Clayton, Manchester 11, and the colour laboratory of the Cornbrook Chemical Co. Ltd., has enabled Anchor to develop a range of colours particularly suitable for rubber compounding. Colour patterns of these Ankolors, as they are termed, with technical data are given in a new booklet that, including information on press and steam cures, sponge cures and sulphur chloride cures, is now available.

Telescopic Plug Valves

Goodburn Plastics Ltd., Arundel Road, Uxbridge, have been awarded the agency for plastics telescopic plug valves made by Albert Stubbe, Vlotho, Weser. Produced in p.v.c., high density polythene and polycarbonate, the valves have a wide range of applications.

G. and G. Price List

A new price list of laboratory chemicals has been published by Griffin and George Ltd., laboratory furnishers, Ealing Road, Alperton, Wembley. In 84 pages it covers general chemicals, AnalaR and micro-analytical (M.A.R.) reagents and microscopical stains, reagents for water analysis and other specialised items.

Viton Price Reduced

Du Pont Co. (United Kingdom) Ltd. announce that the price of Viton synthetic rubber is reduced by 32s/lb. to 88s/lb. Economies in production, resulting from increased demand are the reason for the price reduction.

Increasing Conductivity

Electrolube is described by the makers, Electrolube Ltd., as a complex low-carbon liquid composition which increases conductivity between conducting surfaces. It is water-repellent, contains no mineral oil, retains its efficiency over a wide range of temperatures and does not attack nylon, polythene or the formaldehydes.

Mond Nickel Exhibition

A Mond Nickel Co. exhibition is to be staged at Marlands Hall, Southampton, from 27-30 October. Over 12,000 designers and technicians have been invited to visit the exhibition, which will feature the properties of nickel, nickel-containing materials and the platinum metals, and to discuss the latest developments in the nickel industry with members of the company's development and research department.

B.S.—Cellulose Acetate Flake

An addendum to British Standard 2880:1957 (PD3474). Testing cellulose acetate flake covers determination of insoluble particles, determination of original colour and colour after heating of plasticised cellulose acetate and determining of viscosity loss on moulding.

Kelvin Hughes Representative

Mr. L. R. Mortimer now represents Kelvin and Hughes (Industrial) Ltd. in the South Eastern counties previously served by Mr. A. R. Mewitt, who has been appointed assistant technical sales manager. Counties covered in the new appointment include Lincoln, Huntingdon, Cambridge, Norfolk, Suffolk, Essex, Herts, East Middlesex and the Luton area.

DIARY DATES

MONDAY 19 OCTOBER

Inst. Metal Finishing—London: Northampton Polytechnic, St. John St., E.C.1, 6.15 p.m. 'High temperature anodising', by A. W. Brace and R. E. M. Polfreman.

S.C.I.—London: 14 Belgrave Sq., S.W.1, 5.30 p.m. 'Official methods for the analysis of pesticides', by Dr. R. de B. Ashworth.

WEDNESDAY 21 OCTOBER

Inst. Chem. Eng.—London: Burlington House, Piccadilly, W.1, 5.30 p.m. 'Gas-solids contacting in fluidised beds', by Dr. K. P. Lanneau.

Inst. of Fuel—London: Inst. of Civil Engineers, Great George St., S.W.1, 5.30 p.m. 'Use of oxygen in combustion processes, with reference to the steel industry', by T. C. Churcher.

S.A.C.—London: The Feathers, Tudor St., E.C.4, 6.30 p.m. Discussion meeting of Microchemistry Group. Subject: 'Dumas determination of nitrogen'.

THURSDAY 22 OCTOBER

Fertiliser Soc.—London: Burlington House, Piccadilly, W.1, 2.30 p.m. 'Soil analysis and fertiliser recommendations', by Dr. A. M. Smith.

O.C.C.A. with **S.C.I.**—London: Manson House, 26 Portland Place, W.1, 7 p.m. 'Polymers and plasticisers derived from fats', by Dr. W. C. Ault.

S.C.I.—London: Royal Institution, Albemarle St., W.1, 6.30 p.m. 4th Baekeland Memorial Lecture: 'Recent progress in polymer chemistry', by Prof. H. Mark.

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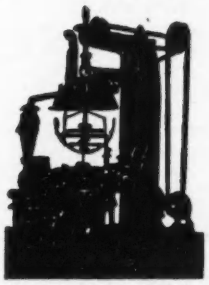

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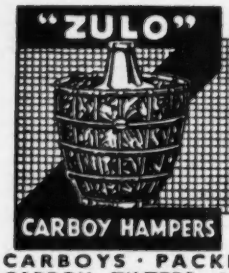

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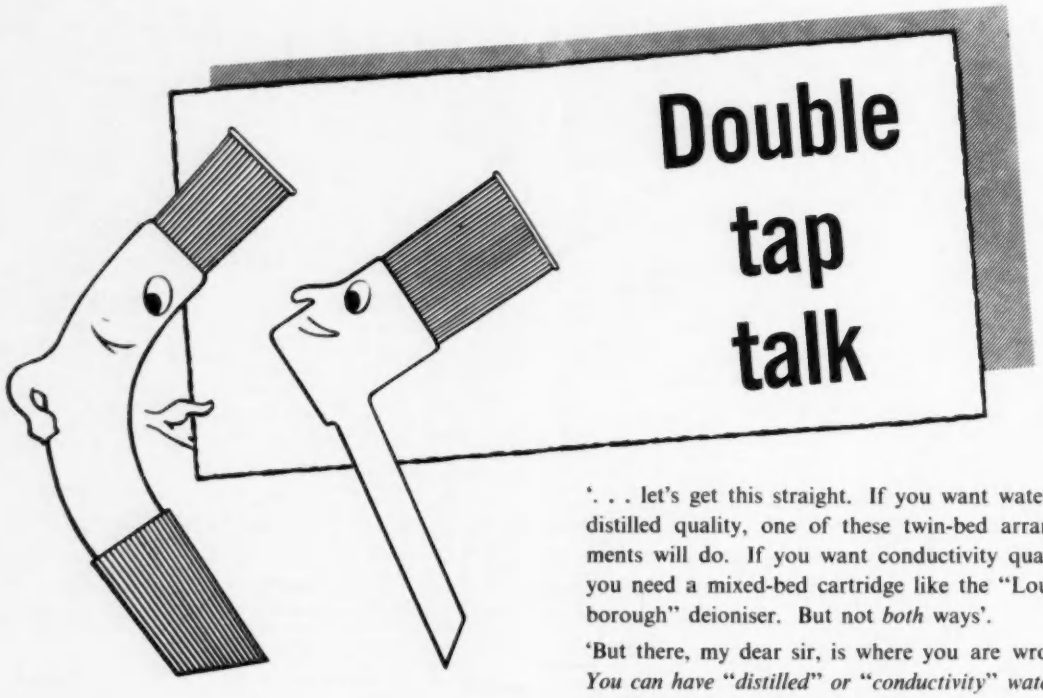

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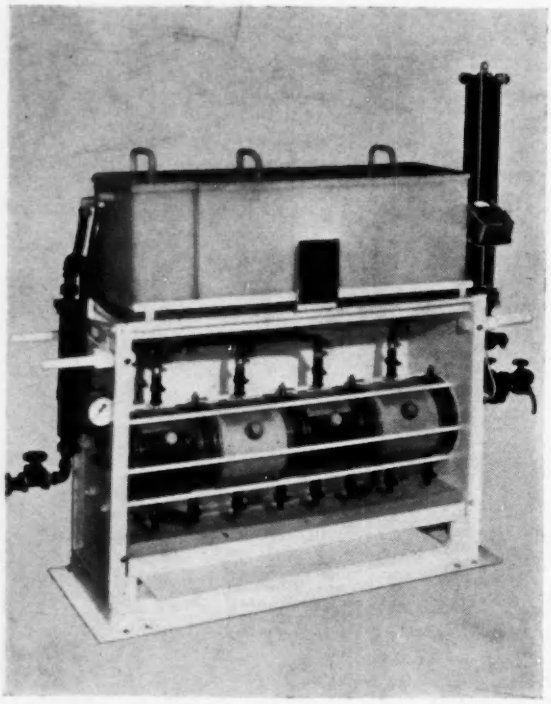
'. . . let's get this straight. If you want water of distilled quality, one of these twin-bed arrangements will do. If you want conductivity quality, you need a mixed-bed cartridge like the "Loughborough" deioniser. But not *both* ways'.

'But there, my dear sir, is where you are wrong. *You can have "distilled" or "conductivity" water—up to 30 gallons an hour of it—from Loughborough's new Stonwata A.300 deioniser*'.



'Now, just a minute! "distilled" or "conductivity" water out of the same tap? That's stretching it a bit far, isn't it?'

'Not a bit. The A.300 is really two units in one. The multi-bed unit produces "distilled" water. You can either use it as it is, or pass it through the mixed-bed cartridge to step it up to "conductivity" level—all at the turn of a tap'.

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'Not with this one. The clever way the multi-bed unit's been designed makes that very simple—you just fill up the built-in tanks with regenerants, open the valves, and in an hour it is *ready to yield another 300 to 2,000 gallons*, according to your water supply'.

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